



Missouri Department of Natural Resources
Air Pollution Control Program
2025 Monitoring Network Plan

August 4, 2025

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Summary of Proposed and Recent Changes

The Missouri Department of Natural Resources (department) operates an extensive network of ambient air monitors. Missouri's Monitoring Network Plan describes the network and discusses proposed and recent changes. The changes are summarized below.

Proposed Changes

1. The department proposes to monitor air toxics in Kansas City and to continue to evaluate low-cost sensors for particulate matter and other pollutants at multiple sites. The start date of the toxics monitoring will be as soon as possible. The sensor study is underway. The data collection will be complete in 2025, and a report will follow. A sensor loan program is planned to be rolled out in the summer of 2026 following the study.
2. The department proposes to install and operate an aethalometer at the existing Troost site.
3. The department proposes to remove the Sherman lead monitor from the network. The department operated Sherman site in the Herculaneum area has been determined to be no longer necessary due to the closure of the Doe Run Herculaneum facility, and the concentrations measured at the site have been well below the lead National Ambient Air Quality Standard (NAAQS).
4. The department proposes to change the existing T640X Troost monitor from a Special Purpose Monitor to a State and Local Air Monitoring Stations (SLAMS) monitor. The Front Street monitor in the Kansas City area is regularly exceeding 80% of the 24-hour $150 \mu\text{g}/\text{m}^3$ PM_{10} exceedance threshold ($120 \mu\text{g}/\text{m}^3$). As a result, the Kansas City areas fall into the 'Medium' category of 40 C.F.R. § 58 Appendix D, requiring four to eight monitors, respectively. Including the Troost monitor, there are two PM_{10} monitors in Missouri and two in Kansas in the Kansas City area. These four monitors would satisfy the regulatory requirement.
5. The department sent an inquiry to the United States Environmental Protection Agency (EPA) regarding a lead NAAQS violation at the department operated Buick Northeast site in 2024. Specifically, the department operates a one-in-six day lead sampler at the site. Doe Run operates a lead sampler every day and is showing compliance with the lead NAAQS during the same time periods. The department inquired with EPA on how to manage this situation. In the event combining data is appropriate, the department plans to research further on how this could be done going forward. If after research and coordination with Doe Run and EPA the department determines this approach would work, the department will formally request from EPA approval to combine the data going forward.
6. The property owner of the existing Liberty monitoring site recently notified the department that development of the property may require a relocation of the equipment. The department will coordinate with the EPA if/when any changes are needed.

Changes since the 2024 Monitoring Network Plan

The department resumed near-road monitoring in the Kansas City area in January 2025 at the new Linden Hills site replacing the previous Blue Ridge, I-70 site.

The department discontinued the PM_{2.5} FRM monitoring at Ladue in 2024. The Federal Reference Method (FRM) was in place to satisfy collocation requirements for the 1405-F and 1405-DF. The department no longer measures PM_{2.5} with the 1405-DF and as a result, the collocation is no longer required.

Sulfur dioxide (SO₂) and the associated meteorological monitoring surrounding the former Ameren Rush Island Energy Center was discontinued on March 31, 2025. Monitoring in the area around Rush Island was being conducted by agreement between the department and Ameren associated with the plan for the Jefferson County nonattainment area submitted to EPA in December 2017. In accordance with the agreement, Ameren submitted a formal request to the department to shut the SO₂ monitors and the associated meteorological equipment around Rush Island down. The department agreed to the request since the Rush Island installation is permanently prohibited from burning coal in the future, and even when the installation was burning coal, measured SO₂ concentrations were far below the primary SO₂ standard. The department is actively working on a revision to the State Implementation Plan (SIP) to account for this change.

The department submitted the Enhanced Monitoring Plan (EMP) on October 11, 2024. 40 C.F.R. § 58, Appendix E5.(h) requires the EMP be revised as a part of the five year network assessment. The network assessment has a revised EMP.

One element of the EMP was to start monitoring NO₂ at Arnold West and West Alton. NO₂ monitoring began at these sites in 2025. An annual report is planned through at least 2030.

The IMPROVE monitoring at the Mingo Wildlife Refuge is currently offline due to tornado damage that occurred in 2025. Colorado State University and the United States Fish and Wildlife Service have made efforts to bring the site back online, but if/when this may occur is unclear at this time.

How to Make Public Comments Concerning this Plan

The department posted Revision 0 of the 2025 Monitoring Network Plan on the web for public review and comment on May 31, 2025. The department accepted comments concerning the plan electronically at cleanair@dnr.mo.gov, or by mail to the following address:

Missouri Department of Natural Resources
Air Pollution Control Program
Air Quality Analysis Section/Air Monitoring Unit
PO Box 176
Jefferson City MO 65102

The department included all comments received through July 11, 2025, and the responses to those comments in Appendix 2 of the final version of the plan (Revision 1). No changes to the plan were made as a result of the comments received during the public notice period. Minor edits were made elsewhere in the plan, including this section.

Introduction

The department operates an extensive network of ambient air monitors to comply with the Clean Air Act and its amendments. The Ambient Air Quality Monitoring Network for Missouri includes State and Local Air Monitoring Stations (SLAMS), special purpose monitors (SPMs) and an NCore monitoring site consistent with requirements in federal regulation in 40 C.F.R. § 58.

40 C.F.R. § 58.10 requires states to submit an annual monitoring network plan to EPA, including any proposed network changes. In accordance with 40 C.F.R. § 58.10, Missouri must include in the plan a statement of whether the operation of each monitor meets the requirements of appendices A, B, C, D and E of 40 C.F.R. § 58, where applicable. All monitors in the Missouri air monitoring network, including those operated by the state and industries under state review, meet the applicable requirements of 40 C.F.R. § 58. Any changes to the SLAMS require approval by the EPA Regional Administrator.

The plan must contain the following information for each monitoring station in the network; (See Appendix 1 and the body of this document):

1. *The AQS site identification number.*
2. *The location, including street address and geographical coordinates.*
3. *The sampling and analysis method(s) for each measured parameter.*
4. *The operating schedules for each monitor.*
5. *Any proposals to remove or move a monitoring station within a period of 18 months following plan submittal.*
6. *The monitoring objective and spatial scale of representativeness for each monitor as defined in appendix D to this part.*
7. *The identification of any sites that are suitable and sites that are not suitable for comparison against the annual PM_{2.5} NAAQS as described in § 58.30.*
8. *The MSA, CBSA, CSA or other area represented by the monitor.*
9. *The designation of any Pb monitors as either source-oriented or non-source-oriented according to Appendix D to 40 CFR part 58.*
10. *Any monitors for which a waiver has been requested or granted by the EPA Regional Administrator as allowed for under appendix D or appendix E to this part. For those monitors where a waiver has been approved, the annual monitoring network plan shall include the date the waiver was approved.*
11. *Any source-oriented or non-source-oriented site for which a waiver has been requested or granted by the EPA Regional Administrator for the use of Pb-PM₁₀ monitoring in lieu of Pb-TSP monitoring as allowed for under paragraph 2.10 of Appendix C to 40 CFR part 58.*
12. *The identification of required NO₂ monitors as near-road, area-wide, or vulnerable and susceptible population monitors in accordance with Appendix D, section 4.3 of this part.*
13. *The identification of any PM_{2.5} FEMs used in the monitoring agency's network where the data are not of sufficient quality such that data are not to be compared to the national ambient air quality standards (NAAQS). For required SLAMS where the agency identifies*

that the PM_{2.5} Class III FEM does not produce data of sufficient quality for comparison to the NAAQS, the monitoring agency must ensure that an operating FRM or filter-based FEM meeting the sample frequency requirements described in § 58.12 or other Class III PM_{2.5} FEM with data of sufficient quality is operating and reporting data to meet the network design criteria described in appendix D to this part.

- 14. The identification of any site(s) intended to address being sited in an at-risk community where there are anticipated effects from sources in the area as required in section 4.7.1(b)(3) of appendix D to this part. An initial approach to the question of whether any new or moved sites are needed and to identify the communities in which they intend to add monitoring for meeting the requirement in this paragraph (b)(14), if applicable, shall be submitted in accordance with the requirements of section 4.7.1(b)(3) of appendix D to this part, which includes submission to the EPA Regional Administrator no later than July 1, 2024. Specifics on the resulting proposed new or moved sites for PM_{2.5} network design to address at-risk communities, if applicable, would need to be detailed in annual monitoring network plans due to each applicable EPA Regional office no later than July 1, 2025. The plan shall provide for any required sites to be operational no later than 24 months from date of approval of a plan or January 1, 2027, whichever comes first.*

EPA requires a network assessment every five years. The department is including a new assessment with the submittal of this network plan.

Network Design

Federal regulation 40 C.F.R. § 58 establishes the design criteria for the ambient air monitoring network. The state must design the network to meet three general objectives:

1. Provide air pollution data to the public in a timely manner.
2. Support compliance with ambient air quality standards and emissions strategy development.
3. Support air pollution research studies.

Specific objectives for the monitoring sites are:

1. Determine the highest pollution concentrations in an area.
2. Measure typical concentrations in areas of high population density.
3. Determine the impact of significant sources or source categories.
4. Determine general background levels.
5. Determine the extent of regional pollutant transport among populated areas.

Minimum site requirements, based on core-based statistical area (CBSA) population, are provided for ozone (O₃), sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), airborne particulate matter with aerodynamic diameter equal to or smaller than 10 micrometers (PM₁₀) and airborne particulate matter with aerodynamic diameter equal to or smaller than 2.5 micrometers (PM_{2.5}).

40 C.F.R. § 58 Appendix E establishes the specific requirements for monitor/probe siting to ensure the ambient data represents the stated objectives and spatial scale. The requirements are

pollutant/scale specific. Periodically, department staff visit and evaluate each monitoring site to ensure compliance with the requirements of 40 C.F.R. § 58 Appendix E. Additional details concerning the sites are available in Appendix 1.

Unanticipated Network Modifications

Changes to the monitoring network may occur outside the annual monitoring network planning process due to unforeseen circumstances including, but not limited to, severe weather, natural events, changes in property ownership, changes in federal funding, or changes in funding available from air emission fees from industrial facilities. The department will communicate any changes to the network that result from conditions outside the state's logistical control and not included in the current monitoring network plan to EPA Region 7 staff and identify such changes in the subsequent annual monitoring network plan.

Special Purpose Monitors

A monitor is designated as an SPM consistent with the regulatory definition in 40 C.F.R. § 58.20 (a): *“An SPM is defined as any monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor in its annual monitoring network plan and in AQS, and which the agency does not count when showing compliance with the minimum requirements of this subpart for the number and siting of monitors of various types.”*

SPMs may be established for many different purposes, including but not limited to NAAQS compliance evaluation, air quality research and characterization, air quality investigation and monitoring method evaluation.

The department includes SPMs in the annual monitoring network plan required by 40 C.F.R. § 58.10. The department installs or approves the installation of these monitors consistent with 40 C.F.R. § 58.20 (f). The department removes, or allows the removal of, these monitors following federal guidelines, which are different for SPMs than for SLAMS. There is more description of each SPM later in the document. The Missouri Monitoring Network Description, Appendix 1, specifies SPM sites and SLAMS sites.

Industrial Monitors

Ambient air monitoring sites classified as Industrial, in this document, indicate sites the industrial source or its contractor operates under an approved industrial monitoring Quality Assurance Project Plan (QAPP) and departmental Quality Management Plan (QMP). Department staff conduct quality assurance audits of these monitoring sites consistent with the approved QAPP.

Missouri oversees ambient air monitoring sites operated by industrial sources for NAAQS compliance. The department has incorporated these industrial sites in the annual Monitoring Network Plan and the ambient air monitoring network. Currently, lead and SO₂ industrial sites are in the Missouri monitoring network.

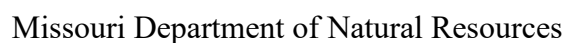
Road Some industrial lead monitoring sites are classified in the EPA Air Quality System (AQS) as non-regulatory due to the sites transitioning to non-ambient status. However, the department has required continued monitoring at these locations in agreements with the industrial source for trends analysis or other purposes.

Waivers

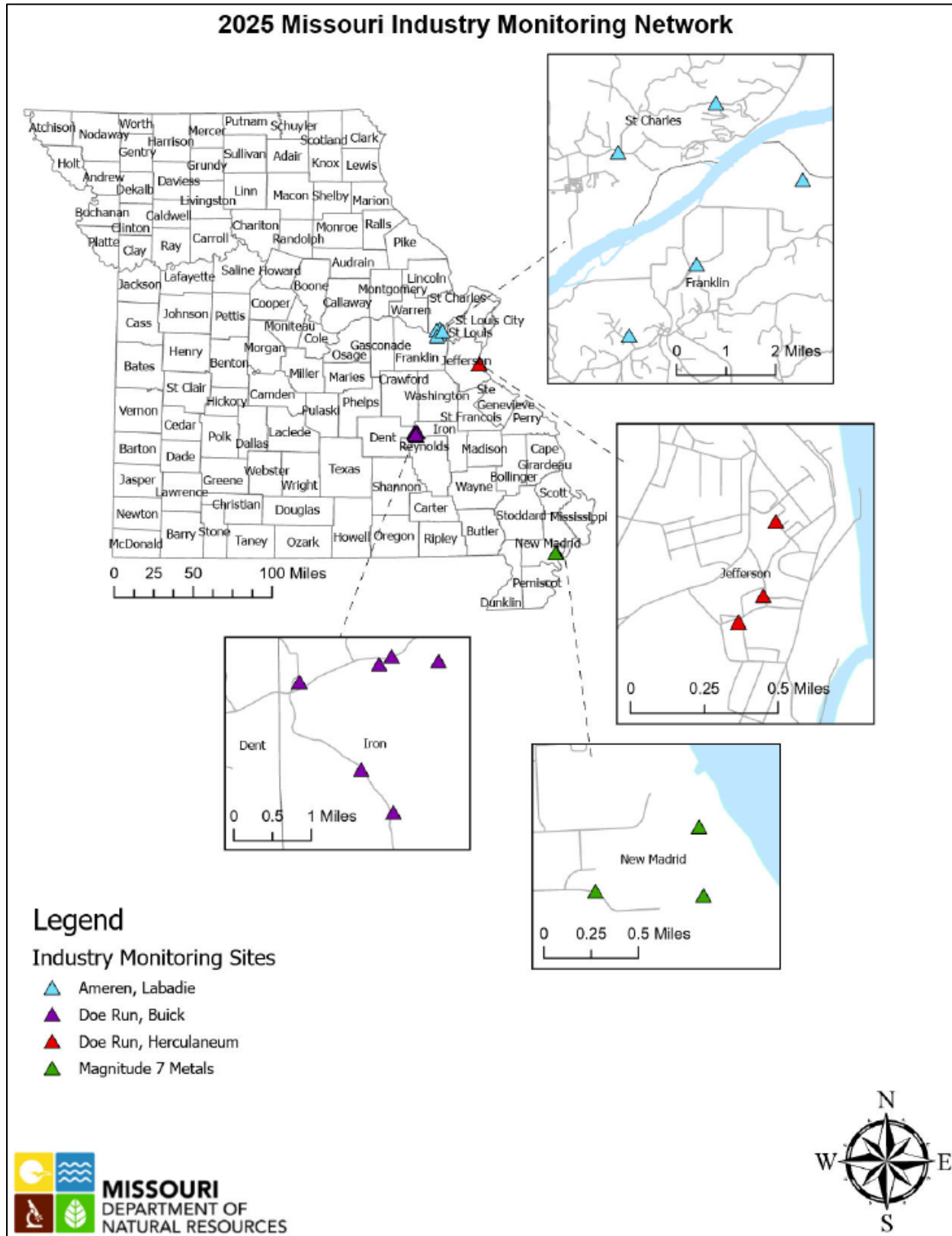
As required by 40 C.F.R. § 58.10(b)(10), the table below indicates site names, AQS identification numbers, reason(s) needed, and if applicable, the approval date of any site waivers. As required by 40 C.F.R. § 58 Appendix E, waivers are required to be renewed as a part of the 5-year network assessment. Waivers that require renewal are being submitted with the final plan and assessment to EPA.

Site	AQS ID	Criteria Waived	Waiver Approval Initial Date	Waiver Approval Most Recent Date
Liberty	29-047-0005	Obstruction	December 2000	December 2000
Mark Twain State Park	29-037-0001	Roadway Distance	December 2000	December 2000
El Dorado Springs	29-039-0001	Roadway Distance	December 2000	December 2000
Blair Street	29-510-0085	Roadway Distance	November 2024	November 2024

2025 Monitoring Network Plan
Rev. 1, August 4, 2025



2025 Ambient Air Monitoring Network, Industrial Sites



Monitoring Network and Proposed Changes

1. Lead (Pb) Monitoring Network

EPA requires the monitoring of lead sources emitting 0.50 tons per year (tpy) or more. Prior to 2010, EPA required monitoring for sources emitting one tpy or more. All airports in Missouri are exempt from this requirement. A review of 2023 emission data did not identify any new sources emitting greater than 0.50 tpy. Only the Doe Run Buick smelter shows emissions greater than 0.50 tpy. The department will continue to review emission data for new sources in the future.

1.1 Doe Run-Operated Sites

Doe Run operates lead monitoring sites in the vicinity of its industrial facilities in Herculaneum and Boss. The operation of some of these sites are under consent judgments or agreements with the department. Doe Run operates other sites voluntarily.

Doe Run Herculaneum also operates one 10-meter meteorological monitoring tower at the Broadway site as per the language set forth under the 2011 Consent Judgment. Doe Run Herculaneum discontinued the Broad Street 40-meter tower per the Consent Judgment.

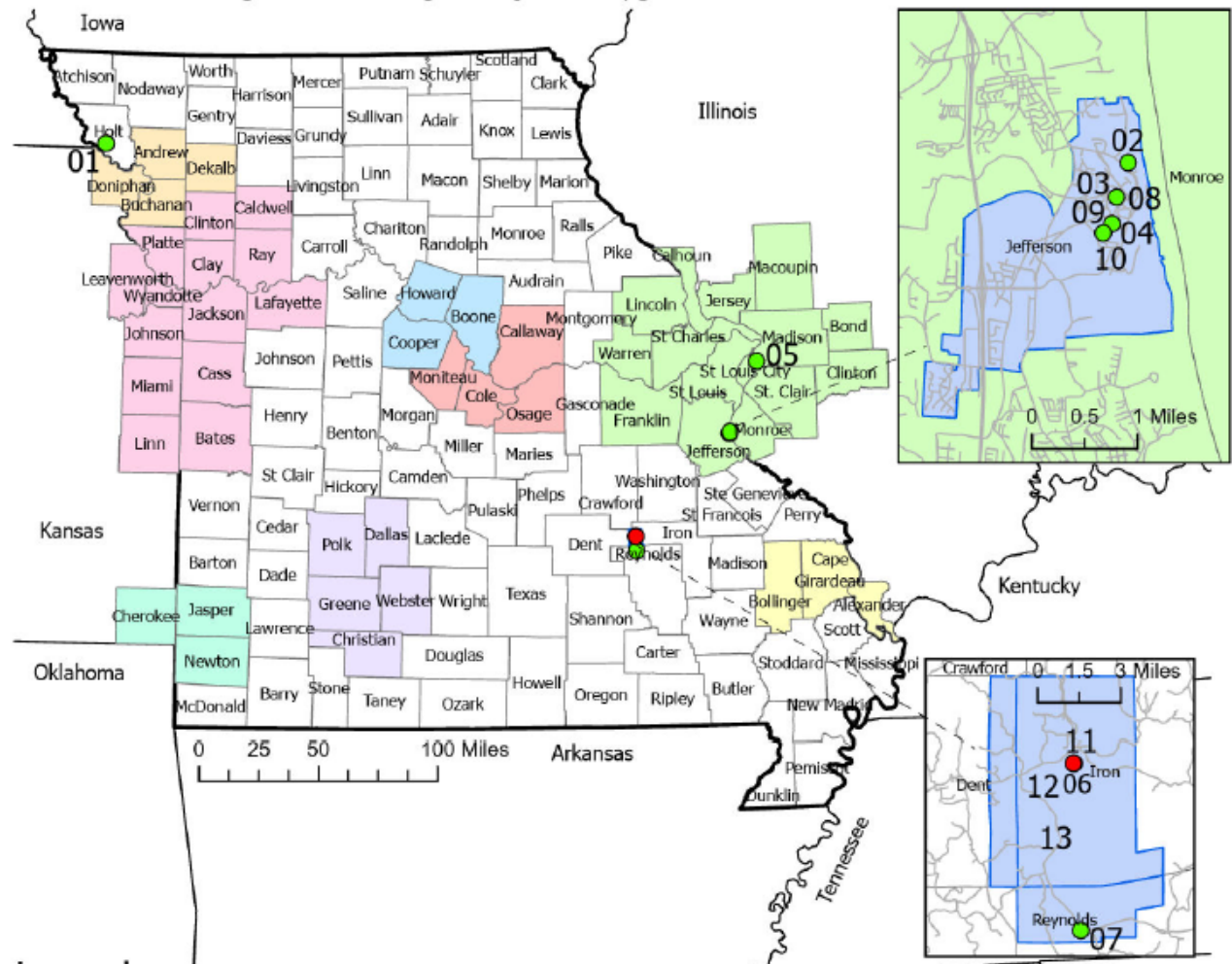
1.2 State-Operated Sites

The department proposes to remove the Sherman lead monitor from the network. The department operated Sherman site in the Herculaneum area has been determined to be no longer necessary due to the closure of the Doe Run Herculaneum facility, and because the concentrations measured are well below the lead NAAQS.

The 2025 lead monitoring network is shown in the following map.

Missouri Lead (Pb) Monitoring Network, 2025

Rolling 3-Month Average NAAQS = $0.15 \mu\text{g}/\text{m}^3$



Legend

- Lead Monitor in Compliance
- Lead Monitor in Violation
- Lead Non-attainment Area

MSA, Population Estimate 2024

- Cape Girardeau, MO-IL MSA, 98,862
- St. Joseph, MO-KS MSA, 119,124
- Jefferson City, MO MSA, 151,523
- Joplin, MO-KS MSA, 207,131
- Columbia, MO MSA, 219,426
- Springfield, MO MSA, 496,975
- Kansas City, MO-KS MSA, 2,253,579
- St. Louis, MO-IL MSA, 2,811,927



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Pb Sites ('22-'24 First Maximum Average*)

State Sites

Forest City Area

01 Forest City, Exide Levee (0.02)

St. Louis, MO-IL MSA

02 Herculaneum, Sherman (0.01)

03 Dunklin High School (0.03)

04 Herculaneum, Mott Street (0.02)

05 Air Products, IL (0.04)

New Lead Belt Area

06 Buick NE (0.21)

07 Oates (0.04)

Doe Run-Operated Sites

St. Louis, MO-IL MSA

08 Herculaneum, Dunklin High School^ (0.05)

09 Herculaneum, City Hall (0.04)

10 Herculaneum, North Cross (0.04)

New Lead Belt Area

11 Doe Run Buick - Buick NE^ (0.13)

*Quality assured data through December 31st, 2024

Red text indicates a violation of the standard

^Design value flagged by AQS as invalid



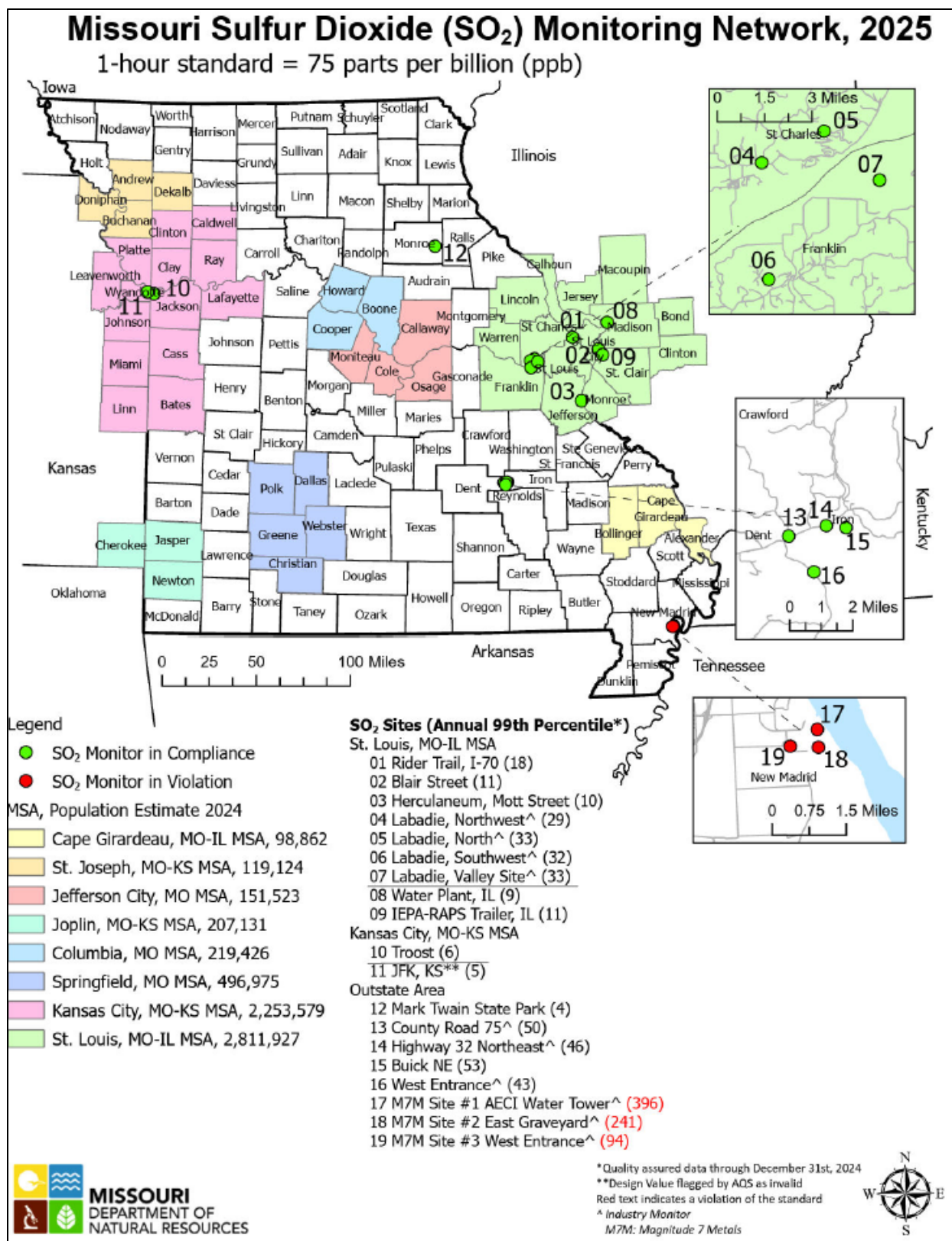
*Proposing to discontinue monitoring at the department operated Sherman site.

2. Sulfur Dioxide (SO₂) Monitoring Network

EPA reviewed the SO₂ standard and announced, in March 2019, the standard would remain at 75 parts per billion (ppb), established in 2010. The minimum required SO₂ monitoring network is determined by the Population Weighted Emissions Index (PWEI). The department updated the PWEI analysis using the most recent population and emission data, 2023 CBSA definitions and 2024 estimated population data from the United States Census Bureau and 2020 National Emission Inventory (NEI) emissions data. The following table summarizes the results. The required numbers of monitoring sites based on the PWEI remain unchanged from previous years; two sites in the St. Louis CBSA, and one in the Kansas City CBSA. All other Missouri CBSAs require no monitoring sites. The department and the Illinois Environmental Protection Agency meet this requirement in the St. Louis area with the Blair Street site in Missouri and the East St. Louis site in Illinois, and in the Kansas City area with the Troost site. The SO₂ monitoring network exceeds requirements by including the Wood River site in Illinois, the Herculaneum site in Missouri, and the JFK site in Kansas. Communications received from the Illinois Environmental Protection Agency and the Kansas Department of Health and Environment (KDHE) indicate those agencies expect to continue SO₂ monitoring at these sites.

In addition to the minimum network requirements, the department oversees several industrial SO₂ monitoring sites and one additional site. The following sections detail this information.

Population Weighted Emission Index (PWEI) Summary				
CBSA	Estimated 2024 Population	2020 NEI SO ₂ Emissions (tpy)	PWEI	Required Number of SO ₂ Monitors
St. Louis	2,811,927	62,707.68	176,329	2
Kansas City	2,253,579	5,073.41	11,433	1
Springfield	496,975	2,468.12	1,227	0
Moberly	24,077	13,743.06	331	0
Sikeston	49,707	4,298.53	214	0
Columbia	219,426	522.33	115	0
Joplin	207,131	285.07	59	0
Farmington	67,503	624.97	42	0
Jefferson City	151,523	258.05	39	0
Quincy	73,961	466.25	34	0
Cape Girardeau	98,862	339.62	34	0
St. Joseph	119,124	269.63	32	0
Hannibal	38,924	742.77	29	0
West Plains	40,762	321.08	13	0
Branson	56,744	227.13	13	0
Rolla	45,672	154.51	7	0
Poplar Bluff	41,814	120.65	5	0
Lebanon	36,738	129.83	5	0
Fort Leonard Wood	53,964	86.55	5	0
Kirksville	29,729	107.89	3	0
Sedalia	43,791	55.54	2	0
Warrensburg	55,880	43.02	2	0
Mexico	24,304	30.55	1	0
Maryville	20,503	31.36	1	0
Kennett	27,002	20.58	1	0
Marshall	23,325	20.10	0	0
PWEI=population*SO ₂ (tpy)/1,000,000 PWEI > 1,000,000: 3 monitors 1,000,000 > PWEI > 100,000: 2 monitors 100,000 > PWEI > 5,000: 1 monitor Population estimates from https://www.census.gov/data/tables/time-series/demo/popest/2020s-counties-total.html SO ₂ emissions from 2020 NEI including fire emissions				



*No changes to the SO₂ network are proposed in this plan.

In 2015, EPA finalized the SO₂ Data Requirements Rule (DRR). This rule required air agencies to characterize air quality, either by monitoring or modeling, around sources that emit 2,000 tpy or more of SO₂.

Sources monitoring due to the DRR include Ameren Labadie Energy Center, Magnitude 7 Metals (formerly Noranda Aluminum) and Doe Run Buick Resource Recycling Facility. In addition, Ameren Rush Island Energy Center conducted monitoring based on an agreement with the department associated with the Jefferson County maintenance plan submitted to EPA in December 2017 until March 31, 2025. The following sections include discussions of these sources.

The industrial sources are conducting the SO₂ monitoring in accordance with the SLAMS requirements in 40 C.F.R. § 58. The department reviewed and approved the siting of the monitors based on federal regulations. To meet the requirements of the DRR, the monitors need a minimum of three years of monitoring data, which is now complete. However, the sources cannot discontinue monitoring without EPA approval based on the requirements of 40 C.F.R. § 51.1203(c) (3) or 40 C.F.R. § 58.14.

2.1 Industrial SO₂ and Meteorological Monitoring near the Labadie and Rush Island Energy Centers

Ameren operates two SO₂ ambient air monitoring networks around the Labadie and Rush Island power plants. The department classifies the monitors in the Ameren networks as industrial SO₂ monitors. Sections 2.1.1 and 2.1.2 describe the current status of the Labadie and Rush Island SO₂ monitoring networks.

2.1.1 Labadie Energy Center

Two industrial SO₂ ambient air monitoring sites and a meteorological monitoring station began operation in April 2015, in the area around the Ameren Labadie Energy Center, located at 226 Labadie Power Plant Road in Franklin County. Ameren installed two additional industrial SO₂ monitoring sites southwest and north of the Labadie Energy Center, which began operation on Jan. 1, 2017. In addition, Ameren added meteorological monitoring using a 10-meter tower at the Northwest site. A sound detection and ranging (SODAR) instrument was initially located at the Valley site, relocated to the Northwest site in February 2017, and relocated again to the Labadie plant site in August 2017. Ameren operates these monitoring sites (see the following table) under a department-approved QAPP. The 2015 and 2016 monitoring network plans provide a detailed discussion on the modeling results that support the site selection. These monitors have not shown a violation of the NAAQS. EPA proposed redesignation of the area in St. Charles and Franklin counties around this facility from unclassifiable to attainment in August 2020, but the redesignation has not yet been finalized as of this writing (May 2025).

Summary of Labadie Area Industrial Monitoring Stations:

Monitoring Objective: Source Oriented

Spatial Scale of representativeness: Middle Scale (100 square meters [m²] to 0.5 square kilometer [km²])

Labadie Northwest -SO₂, 10-Meter Meteorological Station. (Latitude: 38.5818 Longitude: -90.865528)

Labadie Valley -SO₂, 10-Meter Meteorological Station. (Latitude: 38.572522 Longitude: -90.796911)

Labadie Southwest -SO₂, (Latitude: 38.52825 Longitude: -90.86301)

Labadie North -SO₂, (Latitude: 38.59557 Longitude: -90.82864)

Labadie Plant -SODAR, (Latitude: 38.54860 Longitude -90.83750)

2.1.2 Rush Island Energy Center

On March 23, 2015, the department and Ameren entered into a consent agreement (see Appendix 3 of the 2015 Monitoring Network Plan) that included Ameren installing and operating an SO₂ monitoring network around the Rush Island Energy Center under department oversight. The siting of these monitors was consistent with the technical process described in the SO₂ DRR. The Rush Island monitoring network design was based on an evaluation of dispersion modeling results, as described in the 2015 and 2016 Monitoring Network Plans. This network began operation in December 2015. These monitors have not shown a violation of the NAAQS. Ameren operated these sites under a department-approved QAPP, which includes performance evaluations (audits) by department staff.

The department requested in February 2016 that EPA make a clean data determination for the Jefferson County area, and EPA published a clean data determination for the area on Sept. 13, 2017. The department submitted to EPA a redesignation request and maintenance plan in December 2017, followed by a maintenance plan supplement in April 2021. EPA proposed redesignation of the Jefferson County SO₂ nonattainment area to attainment of the 2010 SO₂ standard on June 29, 2021 (86 F. R. 34177). In January 2022, EPA published a final rule to approve Missouri's maintenance plan for this area and redesignate it to attainment, effective on Feb. 28, 2022.

In accordance with the 2015 agreement, Ameren submitted a formal request to the department to shut the SO₂ monitors and the associated meteorological equipment around Rush Island down. The department agreed to the request since the Rush Island installation is permanently prohibited from burning coal in the future and even when the installation was burning coal, measured SO₂ concentrations were far below the primary SO₂ standard. The monitors were discontinued March 31, 2025. The department is actively working on a revision to the SIP to account for this change.

2.2 Industrial SO₂ and Meteorological Monitoring near the Doe Run Buick Resource Recycling Facility

The Doe Run Company began SO₂ monitoring at three sites in the area around the Buick Resource Recycling Facility near Boss starting Jan. 1, 2017. Meteorological monitoring is also conducted at the Buick South lead monitoring site, south of the facility. These sites are operated

under a department-approved QAPP, which includes performance evaluations (audits) by department staff. Locations of these ambient SO₂ monitoring sites were determined on the basis of air quality modeling of the impact of facility emissions, as described in the 2016 Monitoring Network Plan. These monitors have not shown a violation of the NAAQS, and EPA finalized the designation of Iron County, where this facility is located, as attainment/unclassifiable in March 2021 (effective April 2021).

Summary of Doe Run Buick Area Industrial Monitoring Stations:

Monitoring Objective: Source Oriented

Spatial Scale of representativeness: Middle Scale (100 m² to 0.5 km²)

West Entrance -SO₂. (Latitude: 37.63211 Longitude: -91.13565)

County Road 75 -SO₂, (Latitude: 37.64876 Longitude: -91.14890)

Hwy. 32 Northeast (Former PSD site) -SO₂, (Latitude: 37.65319 Longitude: 91.12795)

2.3 Industrial SO₂ and Meteorological Monitoring near the Magnitude 7 Metals (formerly Noranda Aluminum) Facility

Magnitude 7 Metals (M7M) is conducting SO₂ monitoring at three sites and meteorological monitoring at one in the area around its facility near New Madrid. Monitoring at these sites started in January 2017. M7M operates these sites under a department-approved QAPP, which includes performance evaluations (audits) by department staff. The department determined the locations for these ambient SO₂ monitoring sites based on air quality modeling of the impact of facility emissions.

In March 2021 (effective April 2021), EPA finalized the designation of an area surrounding the M7M facility as a nonattainment area for the SO₂ NAAQS, based on 2017-2019 data. EPA designated the remainder of New Madrid County as attainment/unclassifiable. All three of the M7M sites continued to be in violation of the NAAQS based on 2019 through 2021, 2020 through 2022, or 2021 through 2023 data. On Oct. 31, 2022, the department proposed a New Madrid SO₂ nonattainment area SIP revision, which was adopted by the Missouri Air Conservation Commission on April 27, 2023. The SIP revision addresses the nonattainment area planning requirements of the Clean Air Act. The plan includes two new enforceable consent agreements for the two major emitting facilities located in the nonattainment area, the M7M primary aluminum smelter and the Associated Electric Cooperative New Madrid Power Plant. In addition to new enforceable emission rates, the control strategy in this plan includes building a new 65-meter stack at the M7M facility. This SIP revision demonstrates attainment for the New Madrid County SO₂ nonattainment area using the newly established enforceable emission rates in an atmospheric dispersion modeling analysis. The SIP revision is currently pending EPA approval.

In January of 2024, M7M curtailed all operations at the facility. This action suspended the consent agreement requirement for the facility to build the new stack unless and until the facility restarts operations. Monitored SO₂ concentrations decreased at the time facility operations were suspended, but monitoring is continuing at the three sites near that facility.

Summary of Magnitude 7 Metals area Industrial Monitoring Stations:

Monitoring Objective: Source Oriented

Spatial Scale of representativeness: Middle Scale (100 m² to 0.5 km²)

Site 1 -SO₂, (Latitude: 36.51361 Longitude: -89.56111)

Site 2 -SO₂, (Latitude: 36.50861 Longitude: -89.56083)

Site 3 -SO₂ and Meteorology, (Latitude: 36.50889 Longitude: -89.57083)

2.4 Rider Trail I-70 Site

The department added an SO₂ monitor, designated as an SPM, to the existing Rider Trail I-70 monitoring site in May 2016 to evaluate SO₂ levels in the general area. Since installing the site, the annual fourth-highest daily one-hour SO₂ concentration has ranged from 12 to 23 ppb.

Since the monitor is in the near-roadway environment and is in an area with several SO₂ sources, the department initially classified the spatial scale of representativeness of the SO₂ measurements as middle-scale. The department may reevaluate this classification if trends in the monitoring data and other analyses warrant increasing the spatial scale of representativeness. The monitoring objective for this monitor is to measure population exposure.

3. National Air Toxics Trends Stations (NATTS), and Other Non-Criteria Pollutants Special Purpose Monitoring

3.1 National Air Toxics Trends Stations Monitoring

Routine NATTS monitoring will continue at Blair Street as described in the NATTS work plan. The department intends to begin NATTS-like monitoring funded by the Inflation Reduction Act at the existing Troost site in Kansas City as soon as possible. The first year at Troost will not include PAH monitoring. After a year of sampling, the monitoring at Troost will include PAH sampling. The NATTS-like sampling at Troost will continue for at least three additional years after the PAH sampling begins.

3.2 Black Carbon

Black Carbon is monitored with an aethalometer at Blair Street. Also, as part of the condition of receiving one-time Section 103 grant funds to implement sites for the near-roadway monitoring network, the department will continue to conduct special purpose PM_{2.5} black carbon monitoring at the Forest Park near-roadway site and at the new Linden Hills near-roadway site using aethalometers (see Section 7). An aethalometer is also planned at the Troost site, with the equipment funded by the Inflation Reduction Act.

4. PM_{2.5} Monitoring Network

4.1 PM_{2.5} SLAMS Network

The minimum monitoring requirement based on population and past PM_{2.5} measurements (40 C.F.R. § 58 Appendix D, Table D-5) requires three sites in the St. Louis area and three in the Kansas City area. St. Louis meets the requirement with six Missouri sites plus five Illinois sites in the St. Louis CBSA (in addition to the near-road sites). Kansas City meets the requirements with three Missouri sites plus two Kansas sites in the Kansas City CBSA (in addition to the near-road site). Per 40 CFR Part 58 Appendix D.4.7.1(b)(3), the Troost and Blair Street monitoring sites are considered at risk community sites.

There is one PM_{2.5} monitor in Missouri that is not applicable for comparison to the annual NAAQS. The Branch Street site is a middle-scale site focused on a group of sources in the industrial riverfront area of St. Louis. This site is not representative of a neighborhood or larger spatial scale for PM_{2.5} monitoring.

The PM_{2.5} monitors deployed at the near-roadway NO₂ monitors are micro-scale monitors, but EPA has indicated in 40 C.F.R. § 58 Appendix D, 4.7.1(c)(2) that *“In many situations, monitoring sites that are representative of microscale or middle-scale impacts are not unique and are representative of many similar situations. This can occur along traffic corridors or other locations in a residential district. In this case, one location is representative of a number of small-scale sites and is appropriate for evaluation of long-term or chronic effects.”* EPA may consider these monitors representative of larger areas near roadways and comparable to the annual PM_{2.5} NAAQS consistent with 40 C.F.R. § 58.30.

The Hercules Glades and Mingo Interagency Monitoring of Protected Visual Environments (IMPROVE) sites meet the requirement for regional background PM_{2.5} monitoring. The monitoring at the Mingo Wildlife Refuge is currently offline due to tornado damage that occurred in 2025. Colorado State University and the United States Fish and Wildlife Service have made efforts to bring the site back online, but if/when this may occur is unclear at this time.

In addition to the Hercules Glades and Mingo regional background sites, the Arnold West and El Dorado Springs sites serve to monitor transport into eastern and western Missouri urban areas, respectively.

The TEOM-1405-Fs are the primary FEM reporting instruments in the Missouri network for PM_{2.5} measurement.

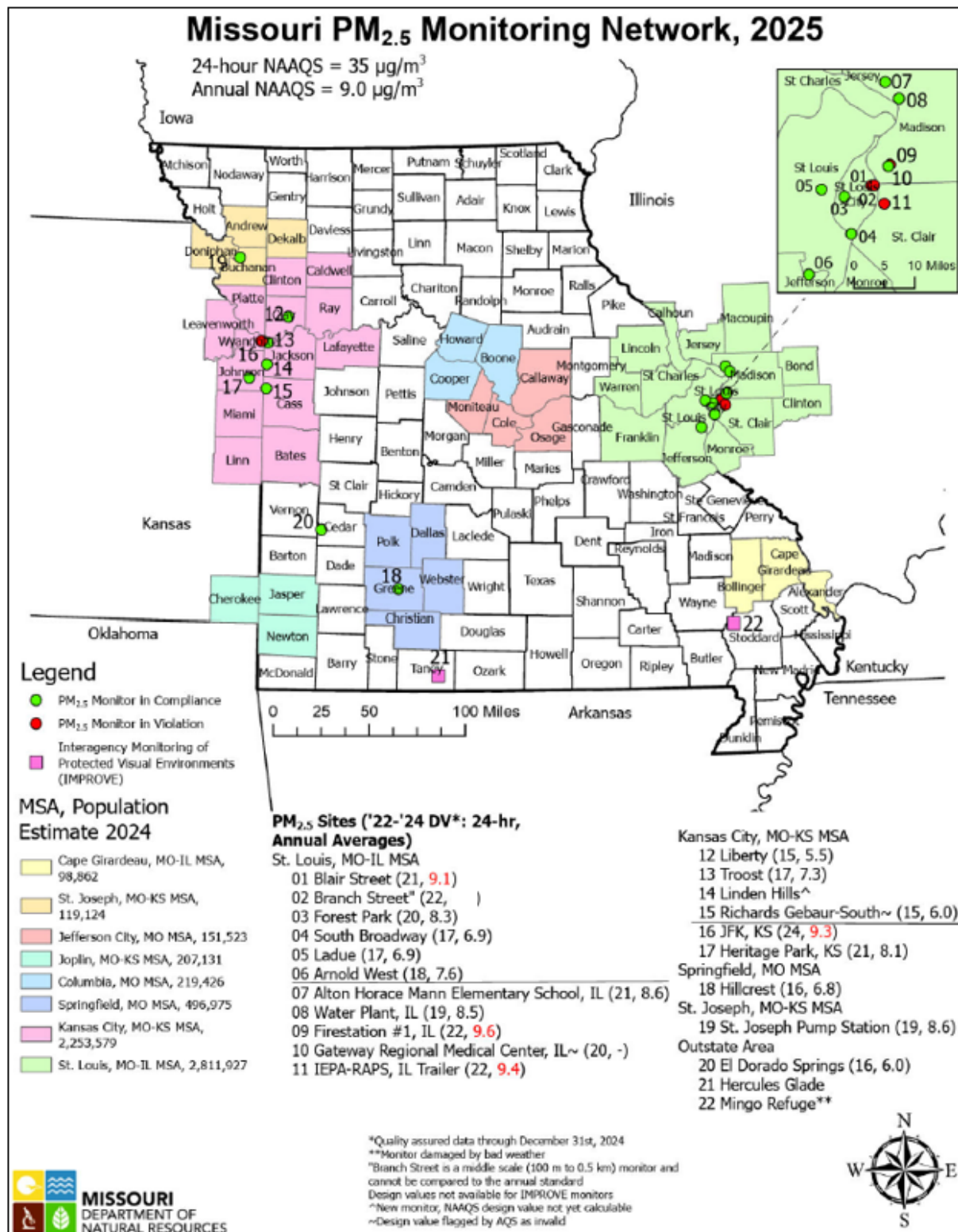
EPA made American Rescue Plan funds available that will be used to accelerate the PM_{2.5} equipment replacement cycle. The department spent some time deciding whether to purchase 1405-Fs or Teledyne API 640s with the funds. The department ultimately decided to purchase 1405-Fs due to continued high bias with the 640 instruments. Both Blair Street and Forest Park had 1405-DF instruments that were replaced by 1405-F instruments. Arnold West, El Dorado Springs, Hillcrest High School, and Liberty replaced 1405-F instruments with 1405-F

instruments. The new Linden Hills site received the 1405-F that was originally allocated for Blue Ridge, I-70.

Two TEOM-1405-F instruments are operated at the St. Joseph Pump Station site; one designated as primary, and one as collocated to satisfy part of the collocation requirement for that FEM method. The FRM PM_{2.5} sampler at Blair Street serves as the collocated FRM sampler for 1405F instruments.

The department is continuing to operate Teledyne API T640X instruments at Blair Street, Troost, and Hillcrest High School in Springfield. The T640X instruments are designated as SPMs to evaluate this instrument, which measures airborne particulate concentration using light scattering, for possible future use in the PM_{2.5} network. The department plans to use the T640X at Troost as a SLAMS monitor for PM₁₀.

The department is also operating a Teledyne API T640, provided by EPA, at the Forest Park site in St. Louis. EPA is using data with a time resolution as short as one minute from that instrument and time-resolved data from the TEOM -F and meteorological instruments in non-parametric trajectory analysis (NTA), which uses high time-resolution PM_{2.5} concentrations, other air quality data, and wind data to help identify source impacts. The department also provides time-resolved data to EPA from the Teledyne API T640X and other instruments at the Troost site in Kansas City.



*No changes to the PM_{2.5} network are proposed in this plan, other than continuing replacement of aging samplers.

4.2 PM_{2.5} Chemical Speciation Network (CSN)

The department conducts PM_{2.5} speciation sampling at Blair Street in St. Louis (every three days) and at Arnold West (every six days).

4.3 PM_{2.5} Section 103 Federal Funding

The department is not proposing any changes to the PM_{2.5} monitoring network other than to continue to replace aging equipment. This plan, however, is contingent on EPA providing adequate grant funds to operate and maintain the PM_{2.5} monitoring network.

40 C.F.R. § 58.14 (c) indicates, “*State, or where appropriate, local agency requests for SLAMS monitor station discontinuation, subject to the review of the Regional Administrator, will be approved if any of the following criteria are met and if the requirements of appendix D to this part, if any, continue to be met. Other requests for discontinuation may also be approved on a case-by-case basis if discontinuance does not compromise data collection needed for implementation of a NAAQS and if the requirements of appendix D to this part if any, continue to be met.*” If reductions to the network become necessary, the department will provide written communication describing the network changes to the EPA Regional Administrator for review and approval, consistent with 40 C.F.R. § 58.14(b).

2025 Missouri PM_{2.5} Monitoring Network

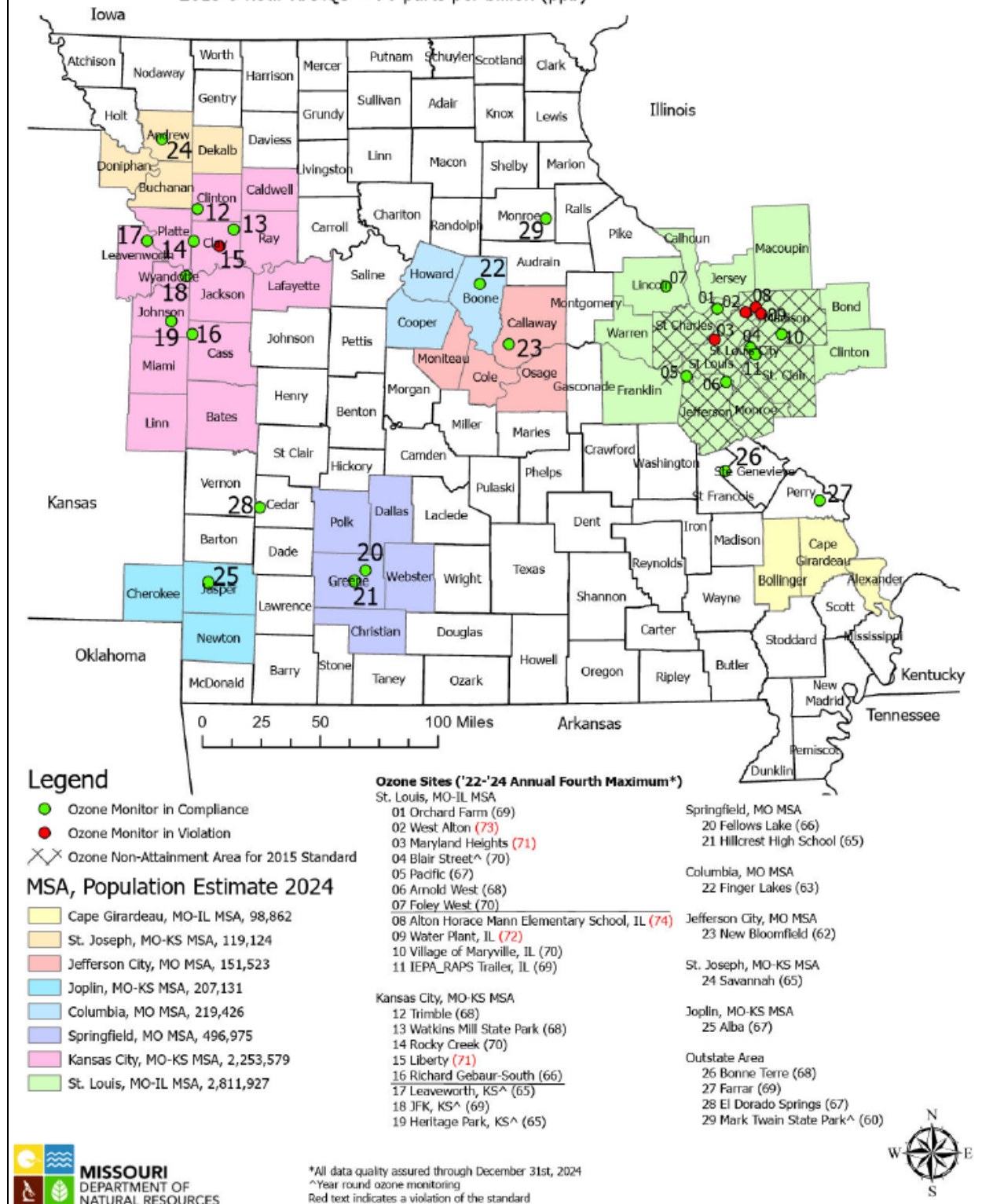
Site	Schedule*	Type	Agency	Purpose
<u>St. Louis</u>				
1.Blair St.	3	Collocated FRM R&P 2025	ESP	NCore and Quality Assurance
	3	Speciation Met1 URG	ESP	Chemical Speciation Network
	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI, NCore, PM10-2.5 continuous
	H	T640x PM Mass Monitor FEM	ESP	Method Performance Evaluation/Research. Not for NAAQS Compliance Determination
2.Branch St.	H	TEOM-1405-F FEM	ESP	24 hr. NAAQS/AQI (unique middle scale monitor†)
	H	T640x PM Mass Monitor FEM	ESP	Method Performance Evaluation/Research. Not for NAAQS Compliance Determination
3 Forest Park, I-64 (near-roadway)	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI, PM10-2.5 continuous (micro scale monitor)
	H	T640 PM Mass Monitor FEM	ESP	Method Performance Evaluation/Research. Not for NAAQS Compliance Determination
4.South Broadway	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI
5.Ladue	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI
6.Arnold West	6	Speciation		Chemical Speciation Network
	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI
<u>Kansas City^</u>				
7.Liberty	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI
8.Troost	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI
	H	Teledyne T640x FEM	ESP	Method Performance Evaluation/Research. Not for NAAQS Compliance Determination
10.Richards-Gebaur South	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI
11. Linden Hills	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI
<u>Springfield</u>				
11.Hillcrest High School	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI
	H	T640x PM Mass Monitor FEM	ESP	Method Performance Evaluation/Research. Not for NAAQS Compliance Determination
<u>St. Joseph</u>				
12.St. Joseph	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI
	H	Collocated TEOM-1405-	ESP	Quality Assurance
<u>Outstate</u>				
13.El Dorado Springs	H	TEOM-1405-F FEM	ESP	24 hr. & Annual NAAQS/AQI
14. Mingo~	3	IMPROVE	Fish & Wildlife Service	Chemical Speciation Network
15.Hercules Glades	3	IMPROVE	Forest Service	Chemical Speciation Network
*3= Every third day; 6= Every sixth day; H= Continuous monitoring, hourly data †The Branch St. Monitor is a unique middle scale impact site and not eligible for comparison to the Annual PM _{2.5} NAAQS (40 CFR 58.30). ~ Mingo is currently offline due to storm damage.				

5. Ozone Monitoring Network

The department is not planning any changes to the ozone monitoring network. Ozone monitoring will continue all year at the Mark Twain State Park (MTSP) site to collect ozone background concentrations needed for Prevention of Significant Deterioration (PSD) modeling projects and at Blair Street to meet the NCore ozone monitoring requirement. The current monitoring network meets the population-based requirements in 40 C.F.R § 58 Appendix D, which requires a minimum of two sites each in the St. Louis, Kansas City and Springfield areas.

Missouri Ozone (O₃) Monitoring Network, 2025

2015 8-hour NAAQS = 70 parts per billion (ppb)



*No changes to the O₃ network are proposed in this plan.

6. PM₁₀ Monitoring Network

The department discontinued collocated FRM PM₁₀ monitoring at Blair Street in St. Louis in February 2018. EPA no longer requires the collocation of the manual PM₁₀ sampler (40 C.F.R. § 58 Appendix A, 3.3.4). The department designated the continuous PM₁₀ from the Teledyne API T640X FEM monitor as primary and discontinued the primary FRM PM₁₀ monitor at the site effective July 1, 2019. The Teledyne API T640X also reports PM_{Coarse} for the Blair NCore requirements.

The St. Louis CBSA includes four PM₁₀ sites (not including the microscale Forest Park site). This monitor count includes the Granite City Fire Station site in Illinois, which the Illinois Environmental Protection Agency expects to continue operating based on communication with that agency. The Branch Street site is exceeding 120% of the standard. As a result, the St. Louis area falls into the ‘High’ category, requiring six to ten monitors. In the 2024 Monitoring Network Plan approval letter, EPA Region 7 stated:

The Branch Street monitoring site ambient PM₁₀ 24-hour average concentrations have exceeded the PM₁₀ NAAQS by at least 20% in recent years, including this year when currently uncertified data preliminarily shows several occurrences. While this meets the criteria for ‘High concentration’ and would increase the minimum number of monitors in 40 CFR 58 Appendix D Section 4.6, we note that the elevated concentrations and their causes appear to be localized and likely controllable with efforts by Missouri and Region 7 to obtain emissions reductions. Having consulted with EPA Region 5, we encourage Missouri to prioritize work to reduce concentrations and eliminate the requirement to install an additional monitor. Reducing emissions from localized sources affecting the monitor will provide a greater air quality benefit to the public than the installation of an additional monitor in the MSA. Please continue to coordinate with Region 7 staff on this issue.

The department agrees with this approach and will continue to work towards this goal to focus resources on reducing emissions around the Branch Street monitor instead of adding additional PM₁₀ monitors to the St. Louis area. The department will continue to coordinate with EPA Region 7 on this issue.

The Front Street monitor is regularly exceeding 80% of the 24-hour 150 µg/m³ PM₁₀ exceedance threshold (120 µg/m³). As a result, the Kansas City area falls into the ‘Medium’ category, requiring four to eight monitors. There are two PM₁₀ monitors in Missouri (Front Street and Troost) and two in Kansas (JFK and Heritage Park) in the Kansas City area. KDHE is not anticipating any network changes. The department will change the 640X at Troost from a Special Purpose Monitor to a SLAMS site in AQS.

In February 2022, the department began monitoring PM₁₀ and PM_{2.5} at Hillcrest High School in Springfield with a Teledyne API T640X instrument as an SPM for ongoing evaluation of the performance of that instrument.

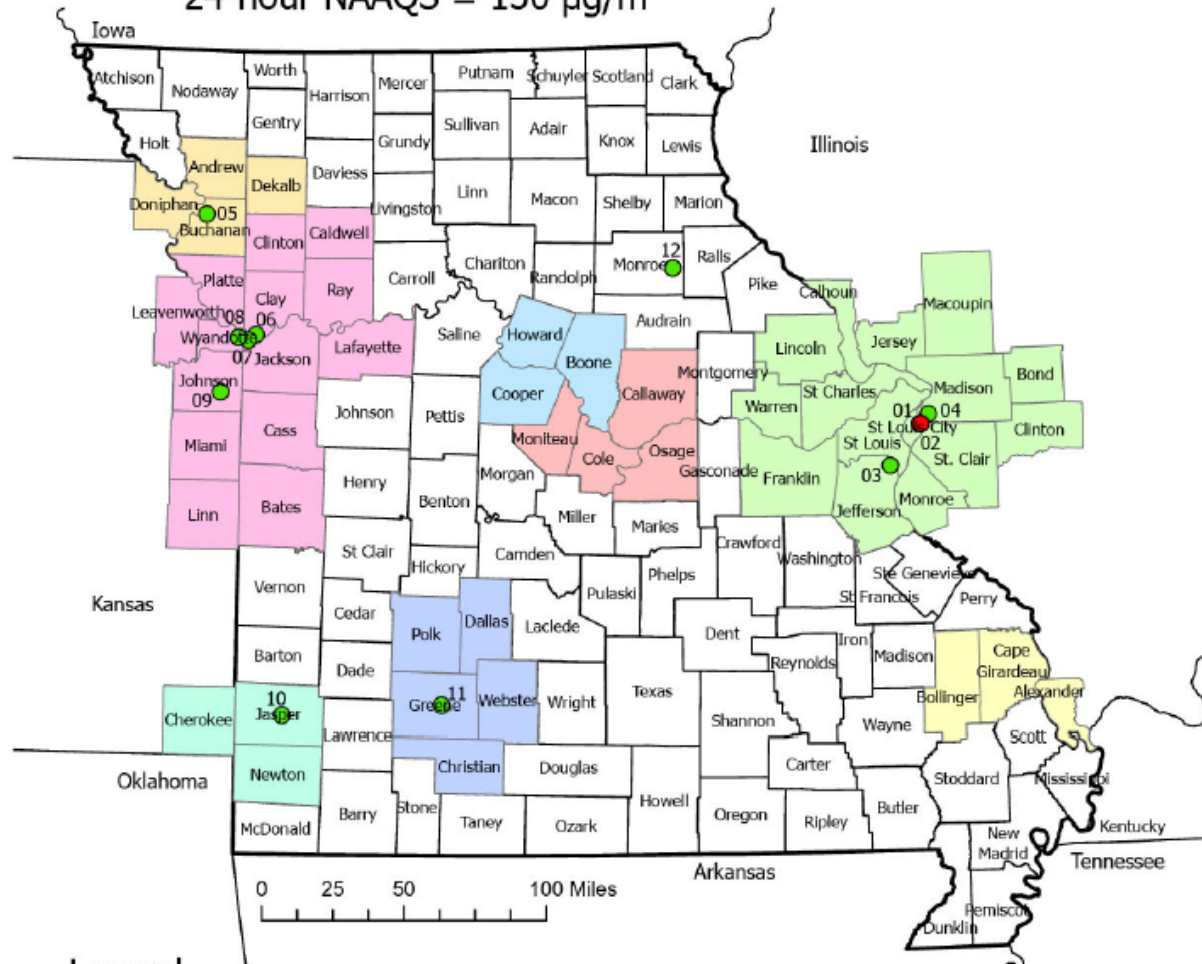
The PM₁₀ minimum monitoring requirement in the Springfield CBSA is zero to one, and monitoring at the Hillcrest High School site meets this requirement. The 2024 estimated

population of the Springfield CBSA is 496,975. If this population increases to 500,000 or more, the minimum requirement will increase to one to two sites, and the Springfield CBSA will continue to meet the monitoring requirement.

The department installed a collocated PM₁₀ TEOM-1400ab monitor at the Carthage site in April 2016 and will continue to operate it because of the importance of that site being near a source.

Missouri PM₁₀ Monitoring Network, 2025

24-hour NAAQS = 150 µg/m³



Legend

- PM₁₀ Monitor in Compliance
- PM₁₀ Monitor in Violation

MSA, Population Estimate 2024

- Cape Girardeau, MO-IL MSA, 98,862
- St. Joseph, MO-KS MSA, 119,124
- Jefferson City, MO MSA, 151,523
- Joplin, MO-KS MSA, 207,131
- Columbia, MO MSA, 219,426
- Springfield, MO MSA, 496,975
- Kansas City, MO-KS MSA, 2,253,579
- St. Louis, MO-IL MSA, 2,811,927

PM₁₀ Sites ('22-'24 Number of Expected Exceedances*)

- St. Louis, MO-IL MSA
 - 01 Blair Street (0.0)
 - 02 Branch Street (4.1)
 - 03 Arnold West (0.0)
 - 04 Firestation #1, IL^ (0.0)
- St. Joseph, MO-KS MSA
 - 05 St. Joseph Pump Station (0.0)
- Kansas City, MO-KS MSA
 - 06 Front Street (0.3)
 - 07 Troost (0.0)
 - 08 JFK, KS^ (0.0)
 - 09 Heritage Park, KS (1.0)
- Joplin, MO-KS MSA
 - 10 Carthage (0.3)
- Springfield, MO MSA
 - 11 Hillcrest High School^ (0.0)
- Outstate Area
 - 12 Mark Twain State Park (0.0)



*Quality assured data through December 31st, 2024

^Design value flagged by AQS as invalid

The 24-hour standard is attained when the expected number of exceedances is less than or equal to one when averaged over 3 calendar years. Red text indicates a violation of the standard.



*Troost is being changed to a SLAMS monitor.

7. Nitrogen Dioxide (NO₂) Monitoring Network

The 2010 revisions to the NO₂ NAAQS required two near-road NO₂ monitoring sites in the St. Louis CBSA and one in the Kansas City CBSA. The department established the first St. Louis area site in January 2013, the Kansas City area site in July 2013 and the second near-roadway site in the St. Louis area in January 2015.

The first St. Louis area near-roadway site, Forest Park, is adjacent to I-64 west of downtown St. Louis. Air monitoring results at that site are consistent with commuter traffic, heaviest on weekday mornings. The second St. Louis area site, Rider Trail I-70, is adjacent to Interstate 70, just west of Interstate 270. Interstate 70 extends across the United States and carries through traffic in addition to commuter traffic and other local traffic. Therefore, the fleet mix and congestion patterns, relative to time of day and day of the week, are different than at the Forest Park site.

The department discontinued monitoring at the Kansas City area near-roadway site, Blue Ridge I-70 in May 2023 because of site security issues. The department resumed near-road monitoring in the Kansas City area in January 2025 at the new Linden Hills site replacing the previous Blue Ridge, I-70 site. The new site is adjacent to I-435 in southern Kansas City.

The Troost site in Kansas City meets the requirement for community-wide monitoring in CBSAs with a population larger than 1 million (40 C.F.R. § 58 Appendix D, 4.3.3(a)). Blair Street meets the requirement in St. Louis. Both the Kansas City and St. Louis areas exceed the requirement with monitoring at the JFK site and East St. Louis site, respectively.

40 C.F.R. § 58, Appendix D, 4.3.4 includes the following additional requirement for NO₂ monitoring:

“4.3.4 Regional Administrator Required Monitoring

- 1. The Regional Administrators, in collaboration with States, must require a minimum of forty additional NO₂ monitoring stations nationwide in any area, inside or outside of CBSAs, above the minimum monitoring requirements, with a primary focus on siting these monitors in locations to protect susceptible and vulnerable populations....”*

The department discontinued NO₂ monitoring at the Margaretta site at the beginning of 2019 and requested that EPA designate Blair Street as a site located in an area where susceptible and vulnerable populations live, work and play, therefore meeting this requirement.

The department monitors NO₂ at the Blair Street site with a cavity attenuated phase shift (CAPS) NO/NO₂/NO_x analyzer. The CAPS analyzer meets the requirement for True NO₂ monitoring as part of the PAMS program (see Section 9) and supplement the required NO_y monitoring at the Blair Street NCore site.

The department submitted an EMP on October 11, 2024. 40 CFR Part 58 Appendix E5.(h) requires the EMP be revised as a part of the five year network assessment. The network assessment has a revised EMP.

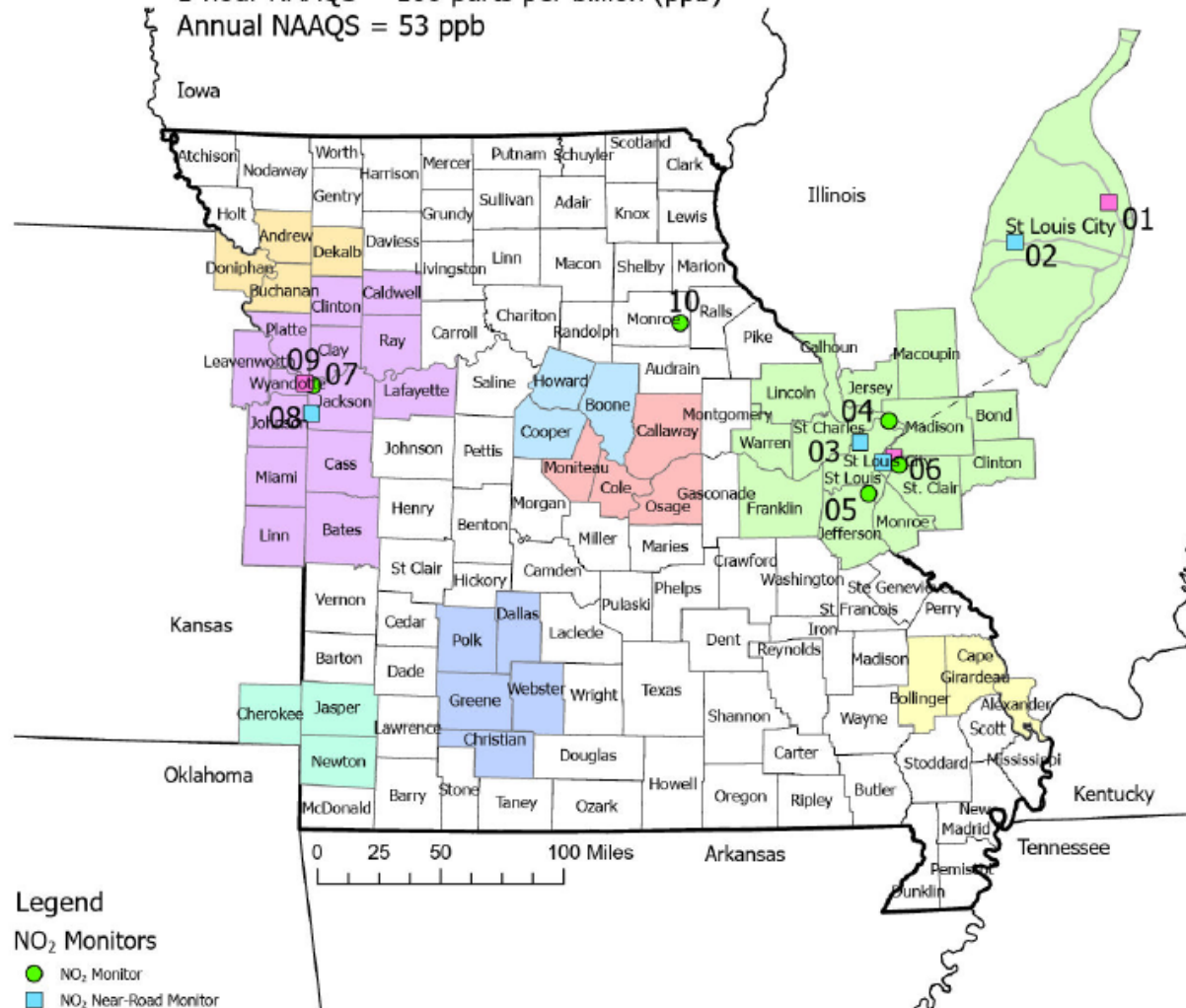
One element of the EMP was to start monitoring NO₂ at Arnold West and West Alton. NO₂ monitoring began at these sites in 2025. An annual report is planned through at least 2030.

The department resumed near-road monitoring in the Kansas City area in January 2025 at the new Linden Hills site replacing the previous Blue Ridge, I-70 site.

Missouri Nitrogen Dioxide (NO₂) Monitoring Network, 2025

1-hour NAAQS = 100 parts per billion (ppb)

Annual NAAQS = 53 ppb



Legend

NO₂ Monitors

- NO₂ Monitor
- NO₂ Near-Road Monitor
- NO₂ National Core Multipollutant (NCore) Monitor

MSA, Population Estimate 2024

- Cape Girardeau, MO-IL MSA, 98,862
- St. Joseph, MO-KS MSA, 119,124
- Jefferson City, MO MSA, 151,523
- Joplin, MO-KS MSA, 207,131
- Columbia, MO MSA, 219,426
- Springfield, MO MSA, 496,975
- Kansas City, MO-KS MSA, 2,253,579
- St. Louis, MO-IL MSA, 2,811,927

NO₂ Sites ('22-'24 Annual 98th percentile, '24 Annual Mean*)

St. Louis, MO-IL MSA

- 01 Blair Street (45, 9.22)
- 02 Forest Park, I-64 (42, 8.18)
- 03 Rider Trail, I-70 (41, 9.15)
- 04 West Alton[^]
- 05 Arnold West[^]
- 06 IEPA-RAPS Trailer, IL (42, 11.22)

Kansas City, MO-KS MSA

- 07 Troost (47, 16.12)
- 08 Linden Hills, I-435[^]
- 09 JFK, KS (46, TBD)

Outstate Area

- 10 Mark Twain State Park (7, 1.33)



*Quality assured data through December 31st, 2024
[^]New monitor, NAAQS design value not yet calculable



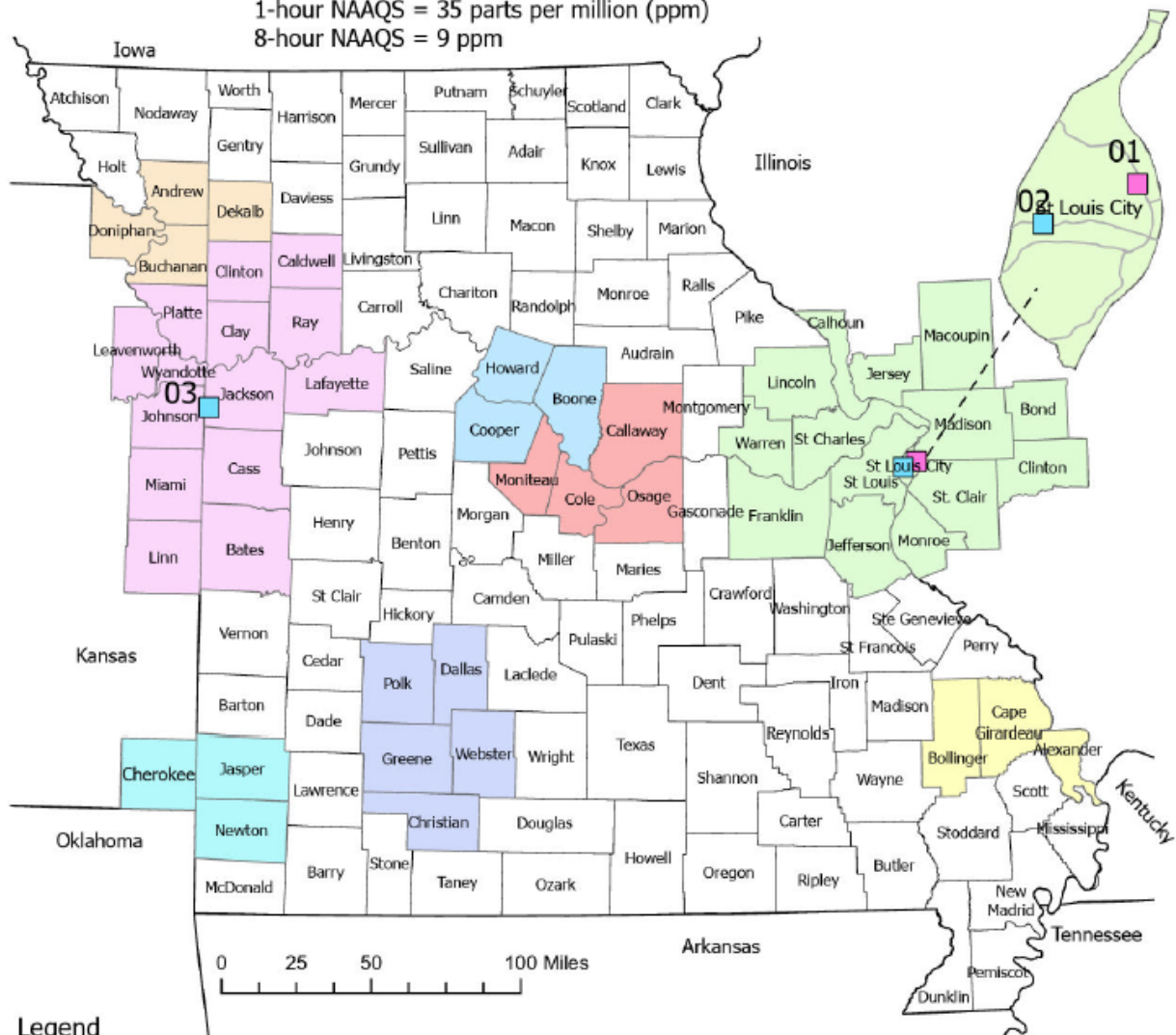
8. Carbon Monoxide (CO) Monitoring Network

The 2013 NAAQS rule for CO requires near-road CO monitoring at one site in the St. Louis CBSA. The department established CO monitoring sites at the same time as the NO₂ monitoring sites at the Forest Park I-40/64 and Blue Ridge I-70 near-roadway monitoring sites. The department discontinued monitoring at the Blue Ridge I-70 in May 2023 because of site security issues. The department resumed near-road monitoring in the Kansas City area in January 2025 at the new Linden Hills site replacing the previous Blue Ridge I-70 site. The new site is adjacent to I-435 in southern Kansas City. The department is not proposing any other changes to the CO monitoring network in this plan.

Missouri Carbon Monoxide (CO) Monitoring Network, 2025

1-hour NAAQS = 35 parts per million (ppm)

8-hour NAAQS = 9 ppm



Legend

CO Monitors

- Near-Road CO Monitor
- National Core Multipollutant Monitoring (NCORE) CO Monitor

MSA, Population Estimate 2024

- Cape Girardeau, MO-IL MSA, 98,862
- St. Joseph, MO-KS MSA, 119,124
- Jefferson City, MO MSA, 151,523
- Joplin, MO-KS MSA, 207,131
- Columbia, MO MSA, 219,426
- Springfield, MO MSA, 496,975
- Kansas City, MO-KS MSA, 2,253,579
- St. Louis, MO-IL MSA, 2,811,927

CO Sites (2023-2024 Second Highest Obs: 1-hour, 8-hour Averages*)

St. Louis, MO-IL MSA

01 Blair Street (2.096, 1.5)

02 Forest Park, I-64 (1.468, 1.1)

Kansas City, MO-KS MSA

03 Linden Hills, I-435^



*Quality assured data through December 31st, 2024
^New site, NAAQS design value not yet calculable



9. Photochemical Assessment Monitoring Station

In previous versions of the Monitoring Network Plan, this section served as the Photochemical Assessment Monitoring Station (PAMS) Implementation Plan. PAMS monitoring began in June 2021. This section now describes an ongoing program.

9.1 Introduction: Regulatory Requirements and Guidance Documents

The “National Ambient Air Quality Standards for Ozone; Final Rule,” (*Federal Register*, volume 80, number 206, Oct. 26, 2015), included amendment of 40 C.F.R. § 58, Appendix D (5) to include the following:

“5. NETWORK DESIGN FOR PHOTOCHEMICAL ASSESSMENT MONITORING STATIONS (PAMS) AND ENHANCED OZONE MONITORING

- 1. State and local monitoring agencies are required to collect and report PAMS measurements at each NCore site required under paragraph 3(a) of this appendix located in a CBSA with a population of 1,000,000 or more, based on the latest available census figures.*
- 2. PAMS measurements will include:*
 - (1) Hourly averaged speciated volatile organic compounds (VOCs);*
 - (2) Three 8-hour averaged carbonyl samples per day on a 1 in 3 day schedule, or hourly averaged formaldehyde;*
 - (3) Hourly averaged O₃;*
 - (4) Hourly averaged nitrogen oxide (NO), true nitrogen dioxide (NO₂), and total reactive nitrogen (NO_y);*
 - (5) Hourly averaged ambient temperature;*
 - (6) Hourly vector-averaged wind direction;*
 - (7) Hourly vector-averaged wind speed;*
 - (8) Hourly average atmospheric pressure;*
 - (9) Hourly averaged relative humidity;*
 - (10) Hourly precipitation;*
 - (11) Hourly averaged mixing-height;*
 - (12) Hourly averaged solar radiation; and*
 - (13) Hourly averaged ultraviolet radiation...*
- (g) At a minimum, the monitoring agency shall collect the required PAMS measurements during the months of June, July and August.”*

The same rule included amendment of 40 C.F.R. § 58.10 (a) (10) to include the following:

“A plan for making Photochemical Assessment Monitoring Stations (PAMS) measurements, if applicable, in accordance with the requirements of appendix D paragraph 5(a) of this part shall be submitted to the EPA Regional Administrator no

later than July 1, 2018. The plan shall provide for the required PAMS measurements to begin by June 1, 2019.”

Primarily because of delays in national procurement of some of the required equipment for PAMS measurement, EPA revised this regulation to change the required start date for PAMS measurement to June 1, 2021 (*Federal Register*, volume 85, number 5, Jan. 8, 2020, page 834).

EPA has published a guidance document entitled *PAMS Required Sites Quality Assurance Implementation Plan [QAIP]*, October 2016. The QAIP provides guidance for both EPA and monitoring organizations in implementation of the above-referenced PAMS requirements. The QAIP includes the following recommendations:

“Monitoring organization PAMS Implementation Plan: The monitoring organization Implementation Plan document will specify how the monitoring organization will perform the measurements for the Required Network. The plan will include details on activities such as monitoring site location, costs and schedule of events, among other information. The plan will also include any waivers to siting or monitoring methods.” (Page 13).

“Monitoring organizations should have their PAMS waivers and Required Network Implementation Plans finalized by July 2017 and must have them completed by the end of October 2017.”²⁰

²⁰ The regulation requires that monitoring organization Required Network Ips be developed in their Annual Network Plans due July 2018. However, in order to be operational by June 2019, it would be beneficial to have plans finalized by the end of October 2017.” (Page 21).

EPA provided additional guidance including a PAMS Technical Assistance Document (TAD), finalized in 2019, and a national QAPP, finalized in 2020, and draft standard operating procedures for PAMS instrument systems. EPA updated the PAMS TAD and national QAPP in May 2023. EPA also conducts monthly conference calls to disseminate information and guidance on PAMS monitoring.

Section 9 of the 2018 (and 2019 and 2020) Monitoring Network Plan(s) fulfilled the regulatory requirement in 40 C.F.R. § 58.10 (a) (10) for submittal of a PAMS Implementation Plan by July 2018. The 2017 Monitoring Network Plan included an early version of the plan to meet the recommended schedule in the QAIP for submittal by July 2017 in advance of the regulatory requirement.

9.2 PAMS Measurements

The department conducts PAMS monitoring at the Blair Street Station in St. Louis. The Blair Street Station is an NCore site in a CBSA with a population of greater than 1 million. The JFK site in Kansas City, Kansas is the NCore site and PAMS site in the Kansas City CBSA according to the [2021 Kansas Air Monitoring Network Plan](#). PAMS monitoring began at Blair Street in 2021. As long as the regulatory requirements are in place and funding is available to support this activity, monitoring will continue during the months of June, July and August each year. The

department will report data from PAMS monitoring to EPA's AQS database except for carbonyl and mixing height data as noted below.

The department has not requested any of the waivers from EPA described in 40 C.F.R. § 58, Appendix D (5) (c) through (f).

Each of the required measurements in 40 C.F.R. § 58, Appendix D (5) (b) is discussed below.

9.2.1. Hourly Averaged Speciated Volatile Organic Compounds (VOCs)

EPA evaluated several gas chromatographs (GC) designed to measure concentrations of hourly average speciated VOCs. EPA contracted with two of the vendors of these GC systems to provide instruments to each monitoring organization required to conduct PAMS monitoring. The department selected the Consolidated Analytical Systems (CAS)/Chromatotec AirmOzone Auto-Gas Chromatograph with Flame Ionization Detection. The department received and installed the GC in fall 2020.

The following Revised PAMS Target List lists target compounds for this measurement (carbonyl compounds included in the table are measured in samples described under 9.2.2 below).

9.2.2 Three 8-hour Averaged Carbonyl Samples per Day on a 1 in 3 Day Schedule, or Hourly Averaged Formaldehyde

The department operates a sampler capable of collecting multiple 8-hour samples using derivatized sorbent tubes according to EPA method TO-11A. Analysis of TO-11A samples for the carbonyls listed in the following table (identified by footnote b) is being made available by EPA using its national contract analytical laboratory. The contract laboratory will also enter the carbonyl data into EPA's AQS database.

9.2.3 Hourly Averaged O₃

Hourly averaged ozone is measured at Blair Street as a part of the NCore requirements (see Section 5).

Revised PAMS Target List^a

From EPA Memorandum, Oct. 2, 2017, “[Additional Revisions to the Photochemical Assessment Monitoring Stations Compound Target List](#)”

Existing Priority Compounds	Optional Compounds
1,2,3-Trimethylbenzene	1,3 Butadiene
1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene
1-Butene	1-Pentene
2,2,4-Trimethylpentane	2,2-Dimethylbutane
Acetaldehyde ^b	2,3,4-Trimethylpentane
Benzene	2,3-Dimethylbutane
Cis-2-Butene	2,3-Dimethylpentane
Ethane	2,4-Dimethylpentane
Ethylbenzene	2-Methylheptane
Ethylene	2-Methylhexane
Formaldehyde ^b	2-Methylpentane
Isobutane	3-Methylheptane
Isopentane	3-Methylhexane
Isoprene	3-Methylpentane
M/P Xylene	Acetone
M-Ethyltoluene	Acetylene
N-Butane	Alpha Pinene
N-Hexane	Benzaldehyde ^b
N-Pentane	Beta Pinene
O-Ethyltoluene	Cis-2-Pentene
O-Xylene	Carbon Tetrachloride
P-Ethyltoluene	Cyclohexane
Propane	Cyclopentane
Propylene	Ethanol
Styrene	Isopropylbenzene
Toluene	M-Diethylbenzene
Trans-2-Butene	Methylcyclohexane
	Methylcyclopentane
	N-Decane
	N-Heptane
	N-Nonane
	N-Octane
	N-Propylbenzene
	N-Undecane
	P-Diethylbenzene
	Tetrachloroethylene
	Trans-2-Pentene

^a This table only includes individual target compounds. Monitoring agencies should continue measuring and reporting total non-methane organic compounds (TNMOC)

^b These compounds are carbonyls and are measured using Method TO-11a

9.2.4 Hourly Averaged Nitrogen Oxide (NO), True Nitrogen Dioxide (NO₂) and Total Reactive Nitrogen (NO_y)

NO and NO_y are measured at Blair Street as a part of the NCore requirements. The department replaced the photolytic NO₂ instrument at Blair Street in June 2022 with a cavity attenuated phase shift spectroscopy (CAPS) NO/NO₂/NO_x analyzer designated as FEM that will provide NO and NO_x in addition to the true NO₂ measurement.

9.2.5-9.2.10 Hourly Averaged Ambient Temperature, Hourly Vector-Averaged Wind Direction, Hourly Vector-Averaged Wind Speed, Hourly Averaged Atmospheric Pressure, Hourly Averaged Relative Humidity, and Hourly Precipitation

The department measures temperature, wind direction, wind speed, atmospheric pressure, relative humidity and precipitation at Blair Street.

9.2.11 Hourly Averaged Mixing Height

EPA provided funding for the procurement of a ceilometer, which is an instrument that uses a laser to measure mixing height. The department operates a Vaisala CL-51 ceilometer at the Blair Street site. The department will transfer data from the ceilometer to the Unified Ceilometer Network (UCN) operated by Hampton University and the University of Maryland, Baltimore County. The UCN processes ceilometer data and will input mixing height data into EPA's AQS database.

9.2.12 Hourly Averaged Solar Radiation

Solar radiation is measured at Blair Street.

9.2.13 Hourly Averaged Ultraviolet Radiation

The department operates an ultraviolet radiation measurement instrument at Blair Street.

Network Description/Components

See Appendix 1 for the Network Description, which includes the following components:

Site Data

All ambient air monitoring sites are recorded in the EPA's AQS database. Site data include:

AQS Site Code

The site code includes a numerical designation for state, county and individual site. The state and county codes are assigned a number based on the alphabetical order of the state or county. In most counties, site numbers are assigned sequentially by date established. St. Louis County sites also have a division for municipality within St. Louis County.

Street Address

The official post office address of the lot where the monitors are located. Because not all sites are located in cities or towns, the street address is occasionally given as the intersection of the nearest streets or highways.

Geographical Coordinates

The coordinate system used by the department is latitude and longitude.

Air Quality Control Region

Air Quality Control Regions (AQCR) are defined by EPA and designate either urban regions, like St. Louis or Kansas City, or rural sections of a state, such as northeast or southwest Missouri.

AQCR	AQCR Name
070	Metropolitan St. Louis
094	Metropolitan Kansas City
137	Northern Missouri
138	Southeast Missouri
139	Southwest Missouri

Core Based Statistical Area

Core Based Statistical Areas (CBSA) are defined by the U.S. Census Bureau.

CBSA Code	CBSA Name
00000	Not in a CBSA
16020	Cape Girardeau-Jackson, Missouri-Illinois
17860	Columbia
27620	Jefferson City
27900	Joplin, Missouri-Kansas
28140	Kansas City, Missouri-Kansas
41140	St. Joseph, Missouri-Kansas
41180	St. Louis, Missouri-Illinois
44180	Springfield

Monitor Data

Each monitor is designed to detect a specific chemical pollutant or group of related pollutants. A site may have one or many monitors and not all sites will have the same monitors. Monitor data include:

Pollutant

The common name of the pollutant. Criteria pollutants are defined by statute in the Clean Air Act.

AQS Pollutant Code

Each pollutant has a unique numerical code. PAMS pollutant codes are listed in the PAMS QAPP.

Pollutant Code	Pollutant
14129	Lead – Local Conditions (LC)
42101	Carbon Monoxide
42401	Sulfur Dioxide
42406	Sulfur Dioxide 5-minute
42600	Reactive Oxides of N (NO _y)
42601	Nitric Oxide
42602	Nitrogen Dioxide
42603	Oxides of Nitrogen
44201	Ozone
61103	Resultant Wind Speed
61104	Resultant Wind Direct
62101	Outdoor Temperature
62107	Indoor Temperature
62201	Relative Humidity
63301	Solar Radiation
63302	Ultraviolet Radiation
64101	Barometric Pressure
68105	Average Ambient Temperature
68108	Sample Barometric Pressure
81102	PM ₁₀
88313	Black Carbon-LC
85101	PM ₁₀ – LC
85129	Lead PM10 LC - FRM/FEM
86101	PMCoarse – LC (FRM Difference)
88101	PM _{2.5} FRM
88500	PM _{2.5} Total Atmospheric
88502	PM _{2.5} AQI/Speciation
88503	PM _{2.5} Reference
61106	Sigma Theta
62106	Temperature Difference
65102	Precipitation
88314	UV Carbon PM _{2.5} -Local Condition

85102	Antimony
85103	Arsenic PM ₁₀ LC
85107	Barium PM ₁₀ LC
85109	Bromine PM ₁₀ LC
85110	Cadmium PM ₁₀ LC
85111	Calcium PM ₁₀ LC
85112	Chromium PM ₁₀ LC
85113	Cobalt PM ₁₀ LC
85114	Copper PM ₁₀ LC
85126	Iron PM ₁₀ LC
85128	Lead PM ₁₀ LC
85132	Manganese PM ₁₀ LC
85136	Nickel PM ₁₀ LC
85142	Mercury PM ₁₀ LC
85154	Selenium PM ₁₀ LC
85160	Tin PM ₁₀ LC
85161	Titanium PM ₁₀ LC
85164	Vanadium PM ₁₀ LC
85166	Silver PM ₁₀ LC
85167	Zinc PM ₁₀ LC
85173	Thallium PM ₁₀ LC
85180	Potassium PM ₁₀ LC
88160	Tin PM ₁₀ LC
	<u>Organic Carbon Chemical Speciation Network Unadjusted</u>
88305	PM _{2.5} LC TOT
88312	Total Carbon PM _{2.5} LC TOT
88316	Optical Elemental Carbon PM _{2.5} LC TOT

Parameter Occurrence Code

The Parameter Occurrence Code (POC) distinguishes between different monitors for the same pollutant, most often collocated monitors used for precision and quality assurance. For PM_{2.5}, different parameter occurrence codes are assigned to FRM, collocated FRM, continuous and speciation monitors.

Collocated

Collocated monitors are used for precision and quality assurance activities, and for redundancy for critical pollutants such as ozone.

Sampling Frequency

Sampling frequency varies for each pollutant, depending on the nature of the NAAQS and the technology used in the monitoring method. Most gaseous pollutants, PM_{2.5} and PM₁₀ monitors use continuous monitoring FEM methods and are averaged over one hour. Some particulate pollutants are filter-based FRM methods and averaged over one day.

Scale of Representation

Each monitor is intended to represent an area with similar pollutant concentration. The scales range from only a few meters to many kilometers.

- MIC Microscale** - Defines the concentration in air volumes associated with area dimensions ranging from several meters up to about 100 meters.
- MID Middle** - Defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometers.
- NBR Neighborhood** - Defines concentrations within an extended area of a city that has relatively uniform land use with dimensions of 0.5 to 4.0 kilometers.
- URB Urban** - Defines an overall citywide condition with dimensions on the order of 4 to 50 kilometers.
- REG Regional** - Defines air quality levels over areas having dimensions of 50 to hundreds of kilometers.

Monitor Type/Network Affiliation

The monitor's administrative classification is determined by the purpose for the monitor in the agency sampling strategy. Assignment of monitor types “NCORE” and “PAMS” is limited to EPA headquarters and is done only after a complete review and approval for all site or monitor metadata.

Code	Description
IMPROVE	IMPROVE or IMPROVE Protocol
INDEX SITE	(not currently used by Missouri)
INDUSTRIAL	Used to indicate sites operated by an industry
	Primary Quality Assurance Organization (PQAO)
NATTS	National Air Toxics Trends Station
NEAR ROAD	Near Road monitoring station
NCORE	National Core monitoring station
NON-EPA FEDERAL	(not currently used by Missouri)
NON-REGULATORY	Not used for NAAQS compliance
PAMS	Photochemical Assessment Monitoring Stations
PROPOSED NCORE	Proposed NCore
QA COLLOCATED	Collocated to Satisfy 40 C.F.R 58 Appendix A
SLAMS	State or Local Air Monitoring Station
SPECIAL PURPOSE	Special Purpose Monitoring Station (SPM or SPMS)
SUPLMNTL SPECIATION	Supplemental Speciation
TRENDS SPECIATION	Trends Speciation
TRIBAL MONITORS	(not currently used by Missouri)
UNOFFICIAL PAMS	(not currently used by Missouri)

State Monitoring Objective

Each monitor has a distinct objective such as providing real-time data for public awareness or use in determining compliance with regulations. The state monitoring objective provides more information about the purpose of the monitoring in addition to the monitor objective required of 40 C.F.R. § 58.10(a)(6).

State Objective Code	Objective
AQI	Public Information
COM	NAAQS Compliance
MET	Meteorological Data
RES	Research
SIP	State Implementation Plan
SPP	Special Purpose Project
STA	State Standard

Units

The physical terms used to quantify the pollutant concentration, such as parts per million or micrograms per cubic meter.

Unit Code	Unit Description
001	$\mu\text{g}/\text{m}^3$
007	parts per million
008	parts per billion
011	meters per second
012	miles per hour
013	knots
014	degree, compass
015	degree Fahrenheit
016	millibars
017	degree Celsius
018	Langleys
019	percent humidity
021	inches
022	inches Mercury
025	Langleys per minute
059	Millimeter (Mercury)
073	Liters/minute STP-Flow
077	Micrograms
079	Watts/m^2
083	Cubic meter/minute
105	$\mu\text{g}/\text{m}^3$ LC
106	Minutes
107	Percent
118	Liters/minute LC-Flow
119	Cubic meters/minute LC-Flow
121	parts per trillion

Monitoring/Analytical Method

Each monitor relies on a scientific principle to determine the pollutant concentration, which is described by the sampling method. Each method code is specific for a particular pollutant; therefore, a three numeral code may be used for different methods for different pollutants. This is required by 40 C.F.R. § 58.10(a)(3).

Monitoring Objective

This is the primary monitoring objective(s) for the monitoring parameter required by 40 C.F.R. § 58.10(a)(6). The monitoring objective is specific to the pollutant. Some sites may have more than one monitoring objective, but the primary objective is listed first.

Appendix 1: Missouri Monitoring Network Description

Missouri Ambient Air Monitoring Network



<i>MIC</i>	<i>Microscale (Several meters up to about 100 meters)</i>
<i>MID</i>	<i>Middle (100 meters to 0.5 kilometer)</i>
<i>NBR</i>	<i>Neighborhood (0.5 to 4.0 kilometers range)</i>
<i>URB</i>	<i>Urban (4 to 50 kilometers)</i>
<i>REG</i>	<i>Regional (Tens to hundreds of kilometers)</i>
<i>COM</i>	<i>National Ambient Air Quality Standards (NAAQS) Compliance</i>
<i>MET</i>	<i>Meteorological Data</i>
<i>N/A</i>	<i>Not Applicable</i>
<i>NCore</i>	<i>National Multi-Pollutant Monitoring Stations</i>
<i>NON-A</i>	<i>Non-Ambient Site</i>
<i>NON-R</i>	<i>Non-Regulatory</i>
<i>PQAO</i>	<i>Primary Quality Assurance Organization</i>
<i>RES</i>	<i>Research</i>
<i>SLAMS</i>	<i>State and Local Monitoring Stations</i>
<i>SIP</i>	<i>State Implementation Plan</i>
<i>SPEC</i>	<i>Speciation</i>
<i>STA</i>	<i>State Standard</i>
<i>SPM</i>	<i>Special Purpose Monitoring</i>
<i>SPP</i>	<i>Special Purpose Project</i>
<i>Coll</i>	<i>Collocated monitor. A secondary monitor at a site.</i>

Ameren Missouri (PQAO - 1440)

Labadie "Plant" Site

AQS Site Number **29-071-9003**

~1.5 km south of the Labadie Energy Center, Labadie, MO 63055

Latitude: 38.5486 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.83725 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 680

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (40m)
Std Dev Hz Wind Direction	61106	Industrial	2	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (60m)
Std Dev Hz Wind Direction	61106	Industrial	3	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (80m)
Std Dev Hz Wind Direction	61106	Industrial	4	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (100m)
Std Dev Hz Wind Direction	61106	Industrial	5	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (120m)
Std Dev Hz Wind Direction	61106	Industrial	6	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (140m)
Std Dev Hz Wind Direction	61106	Industrial	7	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (160m)

Std Dev Hz Wind Direction	61106	Industrial	8	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (180m)
Std Dev Hz Wind Direction	61106	Industrial	9	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (200m)
Std Dev Hz Wind Direction	61106	Industrial	10	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (220m)
Std Dev Hz Wind Direction	61106	Industrial	11	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (240m)
Std Dev Hz Wind Direction	61106	Industrial	12	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (260m)
Std Dev Hz Wind Direction	61106	Industrial	13	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (280m)
Std Dev Hz Wind Direction	61106	Industrial	14	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (300m)
Temperature Virtual	62102	Industrial	1	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (40m)
Temperature Virtual	62102	Industrial	2	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (60m)
Temperature Virtual	62102	Industrial	3	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (80m)
Temperature Virtual	62102	Industrial	4	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (100m)

Temperature Virtual	62102	Industrial	5	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (120m)
Temperature Virtual	62102	Industrial	6	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (140m)
Temperature Virtual	62102	Industrial	7	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (160m)
Temperature Virtual	62102	Industrial	8	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (180m)
Temperature Virtual	62102	Industrial	9	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (200m)
Temperature Virtual	62102	Industrial	10	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (220m)
Temperature Virtual	62102	Industrial	11	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (240m)
Temperature Virtual	62102	Industrial	12	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (260m)
Temperature Virtual	62102	Industrial	13	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (280m)
Temperature Virtual	62102	Industrial	14	☐	1	N/A	MET	017	deg C	128	Scintec MFAS Sodar/RASS Radar Profiler	Other (300m)

Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (40m)
Wind Direction - Resultant	61104	Industrial	2	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (60m)
Wind Direction - Resultant	61104	Industrial	3	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (80m)
Wind Direction - Resultant	61104	Industrial	4	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (100m)
Wind Direction - Resultant	61104	Industrial	5	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (120m)
Wind Direction - Resultant	61104	Industrial	6	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (140m)
Wind Direction - Resultant	61104	Industrial	7	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (160m)
Wind Direction - Resultant	61104	Industrial	8	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (180m)
Wind Direction - Resultant	61104	Industrial	9	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (200m)
Wind Direction - Resultant	61104	Industrial	10	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (220m)
Wind Direction - Resultant	61104	Industrial	11	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (240m)

Wind Direction - Resultant	61104	Industrial	12	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (260m)
Wind Direction - Resultant	61104	Industrial	13	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (280m)
Wind Direction - Resultant	61104	Industrial	14	☐	1	N/A	MET	014	deg	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (300m)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (40m)
Wind Speed - Resultant	61103	Industrial	2	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (60m)
Wind Speed - Resultant	61103	Industrial	3	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (80m)
Wind Speed - Resultant	61103	Industrial	4	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (100m)
Wind Speed - Resultant	61103	Industrial	5	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (120m)
Wind Speed - Resultant	61103	Industrial	6	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (140m)
Wind Speed - Resultant	61103	Industrial	7	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (160m)
Wind Speed - Resultant	61103	Industrial	8	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (180m)

Wind Speed - Resultant	61103	Industrial	9	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (200m)
Wind Speed - Resultant	61103	Industrial	10	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (220m)
Wind Speed - Resultant	61103	Industrial	11	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (240m)
Wind Speed - Resultant	61103	Industrial	12	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (260m)
Wind Speed - Resultant	61103	Industrial	13	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (280m)
Wind Speed - Resultant	61103	Industrial	14	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (300m)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (40m)
WS - Sigma Theta (Vertical)	61110	Industrial	2	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (60m)
WS - Sigma Theta (Vertical)	61110	Industrial	3	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (80m)
WS - Sigma Theta (Vertical)	61110	Industrial	4	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (100m)

WS - Sigma Theta (Vertical)	61110	Industrial	5	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (120m)
WS - Sigma Theta (Vertical)	61110	Industrial	6	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (140m)
WS - Sigma Theta (Vertical)	61110	Industrial	7	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (160m)
WS - Sigma Theta (Vertical)	61110	Industrial	8	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (180m)
WS - Sigma Theta (Vertical)	61110	Industrial	9	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (200m)
WS - Sigma Theta (Vertical)	61110	Industrial	10	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (220m)
WS - Sigma Theta (Vertical)	61110	Industrial	11	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (240m)
WS - Sigma Theta (Vertical)	61110	Industrial	12	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (260m)
WS - Sigma Theta (Vertical)	61110	Industrial	13	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (280m)
WS - Sigma Theta (Vertical)	61110	Industrial	14	☐	1	N/A	MET	011	m/s	127	Scintec MFAS Sodar/RASS Acoustic Sounder	Other (300m)

Labadie, North

AQS Site Number **29-183-9004**

~150 ft. north of Terry Rd and ~200 ft. Kingfisher Ct, Augusta, MO 63332

Latitude: 38.59557 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.82864 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 816

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Labadie, Northwest

AQS Site Number **29-183-9002**

Rt. 94, Augusta, MO 63332 near the intersection with Schluersburg Road

Latitude: 38.5818 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.865528 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 550

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)

Relative Humidity	62201	Industrial	1	☐	1	N/A	MET	019	%humidity	061	Met One 083D	Other
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (10m Tower)
Std Dev Vt Wind Direction	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)

Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)

Labadie, Southwest

AQS Site Number **29-071-9002**

870 Albertina Lane, Labadie, MO 63055

Latitude: 38.52825 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.86301 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 630

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Labadie, Valley Site

AQS Site Number **29-071-9001**

2901 Labadie Bottom Road, Labadie, MO 63055

Latitude: 38.572522 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.796911 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 525

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	Industrial	1	☐	1	N/A	MET	016	Millbars	015	Instrumental-Barometric Press Transducer	Other

Outdoor Temperature	62101	Industrial	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	Industrial	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	Industrial	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Heights)
Precipitation	65102	Industrial	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	Industrial	1	☐	1	N/A	MET	019	%humidity	061	Met One 083D	Other
Solar Radiation	63301	Industrial	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	Industrial	1	☐	1	N/A	MET	014	deg	063	Arithmetic Standard Deviation	Other (10m Tower)
Std Dev Vt Wind Direction	61107	Industrial	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented

Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	100	Ultra-violet Fluorescence	Source Oriented
Wind Direction - Resultant	61104	Industrial	1	☐	1	N/A	MET	014	deg	020	Vector Summation	Other (10m Tower)
Wind Direction - Scalar	61102	Industrial	1	☐	1	N/A	MET	014	deg	063	Climatronics	Other (10m Tower)
Wind Speed - Resultant	61103	Industrial	1	☐	1	N/A	MET	011	m/s	020	Vector Summation	Other (10m Tower)
Wind Speed - Scalar	61101	Industrial	1	☐	1	N/A	MET	011	m/s	063	Climatronics	Other (10m Tower)
Wind Speed - Vertical	61109	Industrial	1	☐	1	N/A	MET	011	m/s	020	Electronic Averaging	Other (10m Tower)
WS - Sigma Theta (Vertical)	61110	Industrial	1	☐	1	N/A	MET	011	m/s	020	Arithmetic Standard Deviation	Other (10m Tower)

Doe Run Buick (PQAO - 1290)

County Road 75

AQS Site Number **29-093-9010**

98 Iron County Road, Bixby, MO 65439

Latitude: 37.64876 **AQCR:** 138 SE Missouri

Longitude: -91.14980 **MSA:** 0000 Not in an MSA

Elevation (ft): 1365

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State- Obj</i>	<i>AQS Unit- Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
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Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Doe Run Buick - Buick NE

AQS Site Number **29-093-9008**

346 Power Lane, Bixby West, MO 65439

Latitude: 37.65214 **AQCR:** 138 SE Missouri

Longitude: -91.11689 **MSA:** 0000 Not in an MSA

Elevation (ft): 1423

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State- Obj</i>	<i>AQS Unit- Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
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Lead (TSP) - LC FRM/FEM 14129		Industrial	1	☐	1/1	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
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Doe Run Buick - North #5 (NON-A)

AQS Site Number **29-093-0021**

Doe Run Buick - North#5, Buick, MO 65439

Latitude: 37.65178 **AQCR:** 138 SE Missouri
Longitude: -91.13094 **MSA:** 0000 Not in an MSA
Elevation (ft): 1443

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
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Doe Run Buick - South #1 (NON-A)

AQS Site Number **29-093-0016**

Doe Run Buick - South#1, Buick, MO 65439

Latitude: 37.62400 **AQCR:** 138 SE Missouri
Longitude: -91.12827 **MSA:** 0000 Not in an MSA
Elevation (ft): 1502

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented
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Lead (TSP) - LC FRM/FEM 14129	Industrial	2	☒	1/6	MID	SIP	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Quality Assurance (Collocation)
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Hwy 32 Northeast

AQS Site Number **29-093-9009**

1582 Highway 32, Bixby, MO 65439

Latitude: 37.65319 **AQCR:** 138 SE Missouri
Longitude: -91.12795 **MSA:** 0000 Not in an MSA
Elevation (ft): 1384

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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West Entrance

AQS Site Number29-093-9011

18594 Hwy KK, Boss, MO 65440

Latitude: 37.63211 AQCR: 138 SE Missouri

Longitude: -91.13565 MSA: 0000 Not in an MSA

Elevation (ft): 1463

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State- Obj	AQS Unit- Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Doe Run Herculaneum (PQAO - 1290)

Herculaneum, City Hall (Mott Street)

AQS Site Number **29-099-0020**

360 Short Street, Herculaneum, MO, 63048

Latitude: 38.263394 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.379667 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 468

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM 14129		Industrial	1	☐	1/3	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Highest Concentration

Lead (TSP) - LC FRM/FEM 14129		Industrial	2	☒	1/6	MID	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Quality Assurance (Collocation)
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Herculaneum, Dunklin High School

AQS Site Number **29-099-9002**

1 Black cat Dr., Herculaneum, MO, 63048

Latitude: 38.26703 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.37875 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 445

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM 14129		Industrial	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented and Population Exposure

North Cross, Herculaneum, MO 63048

Latitude: 38.26216 *AQCR:* 070 Metropolitan St. Louis

Longitude: -90.38126 *MSA:* 7040 St. Louis, MO-IL

Elevation (ft): 463

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State- Obj</i>	<i>AQS Unit- Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
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Lead (TSP) - LC FRM/FEM 14129	Industrial	1	☐	1/6	NBR	COM	105	ug/m^3-LC	192	Inductive Coupled Plasma Spectrometry	Source Oriented & Population Exposure
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Environmental Services Program (ESP) [PQAO - 0588]

Alba

AQS Site Number **29-097-0004**

20400 Millwood Rd., Alba, MO 64830

Latitude: 37.2385 **AQCR:** 139 SW Missouri

Longitude: -94.42468 **MSA:** 3710 Joplin, MO

Elevation (ft): 965

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Arnold West

AQS Site Number **29-099-0019**

1709 Lonedell Dr., Arnold, MO 63010

Latitude: 38.44862 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.3958 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 639

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Ammonium Ion PM2.5 LC	88301	SLAMS	6	☐	1/6	NBR	RES	105	ug/m^3-LC	812	Met One SASS Nylon	Population Exposure (UC-Davis)

Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	H	NBR	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
Nitrogen Dioxide	42602	SPM	1	☐	H	NBR	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
OP CSN_Rev Undj PM2.5 LC TOR	88378	SLAMS	6	☐	1/6	NBR	RES	105	ug/m^3-LC	842	URG 3000N w/Pall Quartz filter & Cyclone Inlet	Population Exposure (UC-Davis)
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Oxides of Nitrogen (Nox)	42603	SPM	1	☐	H	NBR	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Blair Street

AQS Site Number29-510-0085

3247 Blair Street, St. Louis, MO 63107

Latitude: 38.65638 AQCR: 070 Metropolitan St. Louis

Longitude: -90.19825 MSA: 7040 St. Louis, MO-IL

Elevation (ft): 492

Parameter	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
1,2,3-trimethylbenzene	45225	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
1,2,4-trimethylbenzene	45208	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact

1-butene	43280	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
2,2,4-trimethylpentane	43250	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Acetaldehyde	43503	PAMS	1	☐	1	URB	PAMS	078	ppbC	202	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Ammonium Ion PM2.5 LC	88301	SPM	6	☐	1/3	NBR	RES	105	ug/m^3-LC	812	Met One SASS Nylon	
Barometric Pressure	64101	SLAMS	1	☐	1	NBR	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Benzene	45201	PAMS	6	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Black Carbon PM2.5 LC	88313	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Population Exposure
Carbon Monoxide	42101	NCORE	1	☐	1	NBR	COM	007	ppm	593	Teledyne T300U	Population Exposure
cis-2-butene	43217	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact

Ethane	43202	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Ethylbenzene	45203	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Ethylene	43203	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Formaldehyde	43502	PAMS	1	☐	1	URB	PAMS	078	ppbC	202	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Indoor Temperature	62107	SLAMS	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other (Large Shelter)
Indoor Temperature	62107	SLAMS	2	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other (Small Shelter)
Isobutane	43214	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Isopentane	43221	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Isoprene	43243	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact

Lead PM10 LC	85128	SPM	6	☐	1/6	NBR	RES	108	ng/m^3-LC	907	R&P Partisol 2025 Teflon	Population Exposure (ERG)
Lead PM10 LC	85128	SPM	7	☒	1/6	NBR	RES	108	ng/m^3-LC	907	R&P Partisol 2025 Teflon	Population Exposure (ERG)
M&P-xylenes	45109	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
M-ethyltoluene	45212	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
N-butane	43212	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
N-hexane	43231	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Nitric Oxide	42601	NCORE	1	☐	1	NBR	COM	008	ppb	699	Teledyne API 200 EU/501	Population Exposure
Nitric Oxide	42601	SLAMS	3	☐	1	NBR	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
Nitrogen Dioxide	42602	SLAMS	3	☐	1	NBR	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
N-pentane	43220	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact

O-ethyltoluene	45211	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
OP CSN_Rev Undj PM2.5 LC TOR	88378	SPM	6	☐	1/3	NBR	RES	105	ug/m^3-LC	842	URG 3000N w/Pall Quartz filter & Cyclone Inlet	Highest Concentration (UC-Davis)
Oxides of Nitrogen (Nox)	42603	SLAMS	3	☐	1	NBR	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
Ozone	44201	NCORE	1	☐	1	NBR	COM	007	ppm	087	Ultraviolet Absorption	Population Exposure
Ozone	44201	NCORE	2	☒	1	NBR	COM	007	ppm	087	Ultraviolet Absorption	-
PM10 - LC/FEM/NonFEM	85101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	639	Teledyne API T640x	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	6	☐	1	NBR	RES	001	ug/m^3	639	Teledyne API T640x	Population Exposure
PM2.5 - LC FRM/FEM	88101	NCORE	2	☐	1/3	NBR	COM	105	ug/m^3-LC	145	R&P 2025 Sequential w/VSCC	Quality Assurance (Collocation)
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure

PM2.5 - LC FRM/FEM	88101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	638	Teledyne API T640x	Population Exposure
PMCoarse - LC FRM/FEM	86101	NCORE	6	☐	1	NBR	RES	105	ug/m^3-LC	640	Teledyne API T640x	Population Exposure
Precipitation	65102	PAMS	1	☐	1	NBR	MET	021	inches	014	Heated Tipping Bucket	Max precursor emissions impact
Propylene	43205	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Reactive Oxides of N (Noy)	42600	NCORE	1	☐	1	NBR	COM	008	ppb	699	Teledyne API 200 EU/501	Population Exposure
Relative Humidity	62201	NCORE	1	☐	1	N/A	MET	019	%humidity	130	RM Young	Other
Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Styrene	45220	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact

Sulfur Dioxide	42401	NCORE	1	☐	1	NBR	COM	008	ppb	560	Pulsed Fluorescent 43i-TLE	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	NCORE	1	☐	1	NBR	COM	008	ppb	560	Pulsed Fluorescent	Population Exposure
Toluene	45202	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Trans-2-butene	43216	PAMS	1	☐	1	URB	PAMS	078	ppbC	128	CAS Auto-Gas Chromatograph	Max precursor emissions impact
Ultraviolet Radiation	63302	PAMS	1	☐	1	NBR	MET	079	W/m^2	011	UV Radiometer (Photometer)	Max precursor emissions impact
UV Carbon PM2.5 LC	88314	SLAMS	1	☐	1	NBR	RES	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Population Exposure
Wind Direction - Resultant	61104	NCORE	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	NCORE	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Bonne Terre

AQS Site Number **29-186-0005**

15797 Highway D, Bonne Terre, MO 63628

Latitude: 37.90084 **AQCR:** 138 SE Missouri

Longitude: -90.42388 **MSA:** 0000 Not in an MSA

Elevation (ft): 840

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	Regional Transport
Ozone	44201	SLAMS	2	☒	1	REG	COM	007	ppm	047	Ultraviolet Photometric	-
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other

Branch Street

AQS Site Number **29-510-0093**

100 Branch St., St. Louis, MO 63102

Latitude: 38.65643 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.18977 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 429

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other

Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM10 - LC/FEM/NonFEM	85101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	639	Teledyne API T640x	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	6	☐	1	MID	RES	105	ug/m^3-LC	639	Teledyne API T640x	Source Oriented
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MID	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Source Oriented
PM2.5 - LC FRM/FEM	88101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	638	Teledyne API T640x	Source Oriented
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Wind Speed - Resultant 61103 SPM 1 ☐ 1 N/A MET 012 mph 065 Instrumental: RM Young Model 05305 Other (10m Tower)

Buick NE

AQS Site Number29-093-0034

346 Power Lane, Bixby West, MO 65439

Latitude: 37.65212 **AQCR:** 138 SE Missouri

Longitude: -91.11653 **MSA:** 0000 Not in an MSA

Elevation (ft): 1423

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State-Obj</i>	<i>AQS Unit-Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Lead (TSP) - LC FRM/FEM 14129		SLAMS	1	☐	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM 14129		SLAMS	2	☒	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Quality Assurance (Collocation)
Sulfur Dioxide	42401	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	NBR	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10 meters)

Wind Speed - Resultant 61103 SPM 1 ☐ 1 NBR MET 012 mph 065 Instrumental: RM Young Model 05305 Other (10 meters)

Carthage

*AQS Site Number***29-097-0003**

530 Juniper, Carthage, MO 64836

Latitude: 37.19822 *AQCR:* 139 SW Missouri

Longitude: -94.31702 *MSA:* 3710 Joplin, MO

Elevation (ft): 986

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State-Obj</i>	<i>AQS Unit-Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Source Oriented
PM10 - STP FRM/FEM	81102	SLAMS	4	☒	1	MID	COM	001	ug/m^3	079	R&P SA246B TEOM	Quality Assurance (Collocation)
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (5.5 meters)

Dunklin High School

AQS Site Number **29-099-0005**

1 Black Cat Dr., Herculaneum, MO, 63048

Latitude: 38.26703 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.37875 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 445

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM 14129		SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

El Dorado Springs

AQS Site Number **29-039-0001**

Highway 97 & Barnes Road, El Dorado Springs, MO 64744

Latitude: 37.70097 **AQCR:** 139 SW Missouri

Longitude: -94.03474 **MSA:** 0000 Not in an MSA

Elevation (ft): 965

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	Regional Transport

Ozone	44201	SLAMS	2	☒	1	REG	COM	007	ppm	047	Ultraviolet Photometric	-
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	REG	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Regional Transport
Relative Humidity	62201	SPM	2	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (5.5 meters)

Farrar

AQS Site Number29-157-0001

County Rd. 342, Farrar, MO 63746

Latitude: 37.70264
AQCR: 138
SE Missouri

Longitude: -89.698640
MSA: 0000
Not in an MSA

Elevation (ft): 497

Parameter	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Extreme Downwind

Ozone 44201 SLAMS 2 ☒ 1 NBR COM 007 ppm 047 Ultraviolet Photometric -

Fellows Lake AQS Site Number **29-077-0042**

4208 E. Farm Rd. 66, Springfield, MO 65803

Latitude: 37.319254 **AQCR:** 139 SW Missouri

Longitude: -93.214758 **MSA:** 7920 Springfield, MO

Elevation (ft): 1346

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☒	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-

Finger Lakes AQS Site Number **29-019-0011**

1505 E. Peabody Road, Columbia, MO 65202

Latitude: 39.07803 **AQCR:** 137 Northern Missouri

Longitude: -92.31632 **MSA:** 1740 Columbia, MO

Elevation (ft): 726

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other

Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Foley West

AQS Site Number29-113-0004

2100 Highway Y Foley, MO 63347

Latitude: 39.04577 AQCR: 137 Northern Missouri

Longitude: -90.84927 MSA: 7040 St. Louis, MO-IL

Elevation (ft): 715

Parameter	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
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Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
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Forest City, Exide Levee

AQS Site Number29-087-0008

25942 Hwy 111, Forest City, MO 64451

Latitude: 40.027222 AQCR: 137 Northern Missouri

Longitude: -95.235833 MSA: 0000 Not in an MSA

Elevation (ft): 904

Parameter	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129

SLAMS

1

☐

1/6

MID

COM

105

ug/m^3-LC

813

Inductively
Coupled Plasma
Mass
Spectroscopy

Source
Oriented

Forest Park

AQS Site Number29-510-0094

5600 Clayton Avenue, St. Louis, MO 63110

Latitude: 38.63114 AQCR: 070 Metropolitan St. Louis

Longitude: -90.28115 MSA: 7040 St. Louis, MO-IL

Elevation (ft): 551

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State- Obj	AQS Unit- Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental- Barometric Sensor	Other
Black Carbon PM2.5 LC	88313	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Carbon Monoxide	42101	SLAMS	1	☐	1	MIC	COM	007	ppm	554	Gas Filter Corr Thermo Electron 48i TLE	Source Oriented
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	256	Teledyne API Model N500	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	256	Teledyne API Model N500	Source Oriented

Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Height)
Oxides of Nitrogen (Nox)	42603	SPM	1	☐	1	MIC	COM	008	ppb	256	Teledyne API Model N500	Source Oriented
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MIC	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Source Oriented
PM2.5 - LC FRM/FEM	88101	SPM	6	☐	1	MIC	COM	105	ug/m^3-LC	636	Teledyne API T640	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other

Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
UV Carbon PM2.5 LC	88314	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Front Street

AQS Site Number29-095-0018

1331 N. Jackson, Kansas City, MO 64120

Latitude: 39.13198 AQCR: 094 Metropolitan Kansas City

Longitude: -94.52137 MSA: 3760 Kansas City, MO-KS

Elevation (ft): 728

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Highest Concentration & Population Exposure

Herculaneum, Mott Street

AQS Site Number **29-099-0027**

747 Mott St., Herculaneum, MO, 63048

Latitude: 38.263394 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.379667 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 468

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State-Obj</i>	<i>AQS Unit-Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Lead (TSP) - LC FRM/FEM 14129		SLAMS	1	☐	1/3	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented & Highest Concentration
Lead (TSP) - LC FRM/FEM 14129		SLAMS	2	☒	1/6	MID	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Quality Assurance (Collocation)
Sulfur Dioxide	42401	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented & Highest Concentration
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented & Highest Concentration
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (5.5 meters)

Herculaneum, Sherman

AQS Site Number **29-099-0013**

460 Sherman St., Herculaneum, MO, 63048

Latitude: 38.27170 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.37658 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 462

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Lead (TSP) - LC FRM/FEM 14129		SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented

Hillcrest High School

AQS Site Number **29-077-0036**

3319 N. Grant, Springfield, MO 65803

Latitude: 37.25607 **AQCR:** 139 SW Missouri

Longitude: -93.29970 **MSA:** 7920 Springfield, MO

Elevation (ft): 1321

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure

Ozone	44201	SLAMS	2	☒	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - LC/FEM/NonFEM	85101	SLAMS	6	☐	1	NBR	RES	105	ug/m^3-LC	639	Teledyne API T640x	Population Exposure
PM10 - STP FRM/FEM	81102	SLAMS	6	☐	1	NBR	RES	105	ug/m^3-LC	639	Teledyne API T640x	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 - LC FRM/FEM	88101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	638	Teledyne API T640x	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Ladue

AQS Site Number29-189-3001

73 Hunter Ave., Ladue, MO 63124

Latitude: 38.65028 AQCR: 070 Metropolitan St. Louis

Longitude: -90.35021 MSA: 7040 St. Louis, MO-IL

Elevation (ft): 511

Parameter	AQS Code	AQS Monitor Type	AQS POC Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

Liberty

AQS Site Number **29-047-0005**

Highway 33 & County Home Rd., Liberty, MO 64068

Latitude: 39.30314 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.37678 **MSA:** 3760 Kansas City, MO-KS

Elevation (ft): 941

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State-Obj</i>	<i>AQS Unit-Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)

Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other

Linden Hills

AQS Site Number29-095-0043

1076 E 103rd St. Kansas City, Mo 64131

Latitude: 38.940794 AQCR: 094 Metropolitan Kansas City

Longitude: -94.578508 MSA: 3760 Kansas City, MO-KS

Elevation (ft): 919

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Black Carbon PM2.5 LC	88313	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented

Carbon Monoxide	42101	SLAMS	1	☐	1	MIC	COM	007	ppm	554	Gas Filter Corr Thermo Electron 48i TLE	Source Oriented
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescen ce	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescen ce	Source Oriented
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Height)
Oxides of Nitrogen (Nox)	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescen ce	Source Oriented
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	MIC	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Source Oriented

Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Solar Radiation	63301	SLAMS	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
UV Carbon PM2.5 LC	88314	SPM	1	☐	1	MIC	COM	105	ug/m^3-LC	894	Magee Scientific TAPI M633 Aethalometer	Source Oriented
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Mark Twain State Park

AQS Site Number29-137-0001

20057 State Park Office Rd., Stoutsville, MO 65283

Latitude: 39.474906 AQCR: 137 Northern Missouri

Longitude: -91.78878 MSA: 0000 Not in an MSA

Elevation (ft): 710

Parameter	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Nitrogen Dioxide	42602	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Oxides of Nitrogen (Nox)	42603	SPM	1	☐	1	REG	COM	008	ppb	074	Chemiluminescence	General/Background
Ozone	44201	SLAMS	1	☐	1	REG	COM	007	ppm	047	Ultraviolet Photometric	General/Background
Ozone	44201	SLAMS	2	☒	1	REG	COM	007	ppm	047	Ultraviolet Photometric	-
PM10 - STP FRM/FEM	81102	SPM	3	☐	1	REG	SIP	001	ug/m^3	079	R&P SA246B TEOM	General/Background
Sulfur Dioxide	42401	SPM	1	☐	1	REG	SIP	008	ppb	100	Ultra-violet Fluorescence	General/Background
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	REG	COM	008	ppb	100	Ultra-violet Fluorescence	General/Background

Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Maryland Heights

AQS Site Number **29-189-0014**

13044 Marine Ave., Maryland Heights, MO 63146

Latitude: 38.71085 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.47606 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 607

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

New Bloomfield

AQS Site Number **29-027-0002**

2625 Meadow Lake View, New Bloomfield, MO, 65063

Latitude: 38.70608 **AQCR:** 137 Northern Missouri

Longitude: -92.09308 **MSA:** 0000 Not in an MSA

Elevation (ft): 860

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Oates

AQS Site Number29-179-0034

13155 Highway KK, Boss, MO 65440

Latitude: 37.56485 AQCR: 138 SE Missouri

Longitude: -91.11423 MSA: 0000 Not in an MSA

Elevation (ft): 1134

Parameter	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Lead (TSP) - LC FRM/FEM 14129	SLAMS	1	☐	1/6	NBR	COM	105	ug/m^3-LC	813	Inductively Coupled Plasma Mass Spectroscopy	Source Oriented
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Orchard Farm

AQS Site Number29-183-1004

2165 Highway V, St. Charles, MO 63301

Latitude: 38.8994 AQCR: 070 Metropolitan St. Louis

Longitude: -90.44917 MSA: 7040 St. Louis, MO-IL

Elevation (ft): 441

Parameter	AQS Code	AQS Monitor Type	AQS POC	AQS Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
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Ozone	44201	SLAMS	2	☒	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-
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Pacific

AQS Site Number29-189-0005

18701 Old Highway 66, Pacific, MO 63069

Latitude: 38.49011 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.70509 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 524

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
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Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
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Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-
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Richards Gebaur-South

AQS Site Number29-037-0003

1802 E. 203rd Street, Belton, MO, 64012

Latitude: 38.75961 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.57983 **MSA:** 3760 Kansas City, MO-KS

Elevation (ft): 1082

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	087	Ultraviolet Absorption	Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	087	Ultraviolet Absorption	-
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Rider Trail, I-70

AQS Site Number **29-189-0016**

13080 Hollenberg Drive, Bridgeton, MO 63044

Latitude: 38.75264 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.44884 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 515

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State-Obj</i>	<i>AQS Unit-Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Nitrogen Dioxide	42602	SLAMS	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Outdoor Temperature	62101	SPM	2	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (10m Probe Height)
Outdoor Temperature	62101	SPM	3	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (2m Probe Height)
Outdoor Temperature Diff	62106	SPM	1	☐	1	N/A	MET	116	Temp Diff deg C	041	Instrumental: Elect or Mach Avg Lev 2-Lev1	Other (10m - 2m Probe Height)

Oxides of Nitrogen (Nox)	42603	SPM	1	☐	1	MIC	COM	008	ppb	074	Chemiluminescence	Source Oriented
Precipitation	65102	SPM	1	☐	1	N/A	MET	021	inches	014	Heated Tipping Bucket	Other
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	130	RM Young	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Std Dev Hz Wind Direction	61106	SPM	1	☐	1	N/A	MET	014	deg	020	Arithmetic Standard Deviation	Other (10m Tower)
Sulfur Dioxide	42401	SPM	1	☐	1	MID	SPP	008	ppb	100	Ultra-violet Fluorescence	Population Exposure
Sulfur Dioxide Max 5-min Avg	42406	SPM	1	☐	1	MID	SPP	008	ppb	100	Ultra-violet Fluorescence	Population Exposure
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Rocky Creek

AQS Site Number **29-047-0006**

2-114 NW 132 St., Kansas City, MO 64165

Latitude: 39.33181 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.58069 **MSA:** 3760 Kansas City, MO-KS

Elevation (ft): 990

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure
Ozone	44201	SLAMS	2	☒	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	-

Savannah

AQS Site Number **29-003-0001**

11796 Highway 71, Savannah, MO 64485

Latitude: 39.9544 **AQCR:** 137 Northern Missouri

Longitude: -94.849 **MSA:** 7000 St. Joseph, MO

Elevation (ft): 1120

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Population Exposure

Ozone 44201 SLAMS 2 ☒ 1 NBR COM 007 ppm 047 Ultraviolet Photometric -

South Broadway **AQS Site Number**29-510-0007

8227 South Broadway, St. Louis, MO 63111

Latitude: 38.5425 **AQCR:** 070 Metropolitan St. Louis

Longitude: -90.263611 **MSA:** 7040 St. Louis, MO-IL

Elevation (ft): 452

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State-Obj</i>	<i>AQS Unit-Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
Barometric Pressure	64101	SLAMS	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other

St. Joseph Pump Station

AQS Site Number **29-021-0005**

S. Highway 759, St. Joseph, MO 64501

Latitude: 39.741667 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.858333 **MSA:** 7000 St. Joseph, MO

Elevation (ft): 845

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Barometric Pressure	64101	SPM	2	☒	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Outdoor Temperature	62101	SPM	2	☒	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
PM10 - STP FRM/FEM	81102	SLAMS	3	☐	1	NBR	COM	001	ug/m^3	079	R&P SA246B TEOM	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure

PM2.5 - LC FRM/FEM	88101	SLAMS	5	☒	1	NBR	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Quality Assurance (Collocation)
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental- Computed (Indirect)	Other
Relative Humidity	62201	SPM	2	☒	1	N/A	MET	019	%humidity	020	Instrumental- Computed (Indirect)	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (5.5 meters)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (5.5 meters)

Trimble

AQS Site Number29-049-0001

7536 SW. O Highway, Trimble, MO 64492

Latitude: 39.53063 AQCR: 137 Northern Missouri

Longitude: -94.55594 MSA: 3760 Kansas City, MO-KS

Elevation (ft): 1033

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State- Obj	AQS Unit- Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	NBR	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration

Ozone 44201 SLAMS 2 ☒ 1 NBR COM 007 ppm 047 Ultraviolet Photometric -

Troost

AQS Site Number 29-095-0034

724 Troost (Rear), Kansas City, MO 64106

Latitude: 39.10463 **AQCR:** 094 Metropolitan Kansas City

Longitude: -94.57040 **MSA:** 3760 Kansas City, MO-KS

Elevation (ft): 941

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State-Obj</i>	<i>AQS Unit-Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
Barometric Pressure	64101	SPM	1	☐	1	N/A	MET	059	mm (Hg)	014	Instrumental-Barometric Sensor	Other
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	1	URB	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
Nitrogen Dioxide	42602	SLAMS	1	☐	1	URB	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other (4m Probe Height)
Oxides of Nitrogen (Nox)	42603	SPM	1	☐	1	URB	COM	008	ppb	256	Teledyne API Model N500	Population Exposure

PM10 - LC/FEM/NonFEM	85101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	639	Teledyne API T640x	Population Exposure
PM10 - STP FRM/FEM	81102	SPM	6	☐	1	NBR	RES	001	ug/m^3	639	Teledyne API T640x	Population Exposure
PM2.5 - LC FRM/FEM	88101	SLAMS	4	☐	1	NBR	COM	105	ug/m^3-LC	581	PM2.5 VSCC FEM or Thermo Scientific 1405-F	Population Exposure
PM2.5 - LC FRM/FEM	88101	SPM	6	☐	1	NBR	RES	105	ug/m^3-LC	638	Teledyne API T640x	Population Exposure
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	020	Instrumental-Computed (Indirect)	Other
Sulfur Dioxide	42401	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	SLAMS	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Watkins Mill State Park

AQS Site Number29-047-0003

Watkins Mill Road, Lawson, MO 64062

Latitude: 39.40770 AQCR: 094 Metropolitan Kansas City

Longitude: -94.26539 MSA: 3760 Kansas City, MO-KS

Elevation (ft): 1009

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
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Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Extreme Downwind
Ozone	44201	SLAMS	2	☒	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-

West Alton
*AQS Site Number***29-183-1002**

General Electric Store, Highway 94, West Alton, MO 63386

Latitude: 38.8725 *AQCR:* 070 Metropolitan St. Louis
Longitude: -90.226389 *MSA:* 7040 St. Louis, MO-IL
Elevation (ft): 425

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State-Obj</i>	<i>AQS Unit-Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
Indoor Temperature	62107	SPM	1	☐	1	N/A	MET	017	deg C	013	Electronic Averaging	Other
Nitric Oxide	42601	SPM	1	☐	H	NBR	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
Nitrogen Dioxide	42602	SPM	1	☐	H	NBR	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
Outdoor Temperature	62101	SPM	1	☐	1	N/A	MET	017	deg C	040	Electronic Averaging	Other

Oxides of Nitrogen (Nox)	42603	SPM	1	☐	H	NBR	COM	008	ppb	256	Teledyne API Model N500	Population Exposure
Ozone	44201	SLAMS	1	☐	1	URB	COM	007	ppm	047	Ultraviolet Photometric	Max Ozone Concentration & Population Exposure
Ozone	44201	SLAMS	2	☒	1	URB	COM	007	ppm	047	Ultraviolet Photometric	-
Relative Humidity	62201	SPM	1	☐	1	N/A	MET	019	%humidity	130	RM Young	Other
Solar Radiation	63301	SPM	1	☐	1	N/A	MET	079	W/m^2	011	Instrumental-Pyranometer	Other
Wind Direction - Resultant	61104	SPM	1	☐	1	N/A	MET	014	deg	065	Instrumental: RM Young Model 05305	Other (10m Tower)
Wind Speed - Resultant	61103	SPM	1	☐	1	N/A	MET	012	mph	065	Instrumental: RM Young Model 05305	Other (10m Tower)

Magnitude 7 Metals (PQAO - 2368)

Magnitude 7 Metals, Site # 1 AECL Water Tower Location AQS Site Number 29-143-9001

391 St Jude Industrial Park, New Madrid, MO 63869

Latitude: 36.51364 **AQCR:** 138 SE Missouri

Longitude: -89.56093 **MSA:** 0000 Not in an MSA

Elevation (ft): 297

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	Industrial	1	☐	1	MID	MET	017	deg C	013	Electronic Averaging	Other
Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented

Magnitude 7 Metals, Site # 2 East Graveyard AQS Site Number 29-143-9002

391 St Jude Industrial Park, New Madrid, MO 63869

Latitude: 36.50838 **AQCR:** 138 SE Missouri

Longitude: -89.56074 **MSA:** 0000 Not in an MSA

Elevation (ft): 296

Parameter	AQS Code	AQS Monitor Type	AQS POC	Coll	AQS Freq	AQS Scale	State-Obj	AQS Unit-Code	AQS Unit	AQS Method Code	AQS Method	AQS Monitor Objective
Indoor Temperature	62107	Industrial	1	☐	1	MID	MET	017	deg C	013	Electronic Averaging	Other

Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Magnitude 7 Metals, Site # 3 West Entrance	AQS Site Number 29-143-9003
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391 St Jude Industrial Park, New Madrid, MO 63869

Latitude: 36.50899 **AQCR:** 138 SE Missouri

Longitude: -89.57099 **MSA:** 0000 Not in an MSA

Elevation (ft): 298

<i>Parameter</i>	<i>AQS Code</i>	<i>AQS Monitor Type</i>	<i>AQS POC</i>	<i>Coll</i>	<i>AQS Freq</i>	<i>AQS Scale</i>	<i>State-Obj</i>	<i>AQS Unit-Code</i>	<i>AQS Unit</i>	<i>AQS Method Code</i>	<i>AQS Method</i>	<i>AQS Monitor Objective</i>
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Indoor Temperature	62107	Industrial	1	☐	1	MID	MET	017	deg C	013	Electronic Averaging	Other
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Sulfur Dioxide	42401	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
----------------	-------	------------	---	--------------------------	---	-----	-----	-----	-----	-----	--------------------	-----------------

Sulfur Dioxide Max 5-min Avg	42406	Industrial	1	☐	1	MID	COM	008	ppb	060	Pulsed Fluorescent	Source Oriented
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Wind Direction - Resultant	61104	Industrial	1	☐	1	MID	MET	014	deg	065	Instrumental: RM Young Model 05305	Other
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Wind Speed - Resultant	61103	Industrial	1	☐	1	MID	MET	011	m/s	065	Instrumental: RM Young Model 05305	Other
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**Appendix 2: Comments on Proposed 2025 Monitoring Network Plan,
Responses to Comments, and Amendments to the 2025 Monitoring Network
Plan Following the Public Notice Period**

Great Rivers Environmental Law Center Comments



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VIA ELECTRONIC MAIL

July 10, 2025

Missouri Department of Natural Resources
Air Pollution Control Program
Air Quality Analysis Section/Air Monitoring Unit
P.O. Box 176
Jefferson City, MO 65102-0176
cleanair@dnr.mo.gov

Re: Comments to Draft 2025 Monitoring Network Plan

To Whom It May Concern:

Great Rivers Environmental Law Center (“Great Rivers”) respectfully submits to the Missouri Department of Natural Resources (“MDNR”) the following comments to the proposed Draft 2025 Monitoring Network Plan (“the Plan”).

Great Rivers is a public interest law firm that provides free legal services to individuals, organizations and citizen groups working to protect the environment and public health.

Great Rivers acknowledges MDNR’s attempts to address pollutants of concern and supports the plan’s proposal to install an aethalometer at the Troost site. The increased surveillance of black carbon at the Troost site is a necessary addition to the monitoring network. Another commendable addition to the monitoring network is the introduction of Nitrogen Dioxide monitoring in Arnold West and West Alton. The plan’s proposal to monitor air toxics in Kansas City and to later introduce a Kansas City sensor loan program in 2026 would further the inclusion of low-income and communities of color and promote accessibility in air monitoring. Great Rivers supports the implementation of an air sensor loan program and encourages MDNR to follow through with the rollout of this program.

While the plan includes some creditable proposals, it also contains major oversights that put public health and welfare at risk. MDNR should implement the following changes to have quality and consistent air pollution data that protects Missourians.

The Plan Contains Insufficient Ozone Monitoring

In November 2024, the EPA found that St. Louis failed to meet the 2015 ozone NAAQS by the attainment deadline.¹ As a result, the EPA has proposed that St. Louis be reclassified as an ozone serious nonattainment area. Although additional ozone monitoring may not be required in Missouri by the letter of applicable laws and regulations, additional monitoring would serve to provide information that would be helpful to populations of Missourians who already shoulder a significant share of the state's air pollution burden.

Exposure to ozone and NOx can trigger serious health complications, including respiratory and cardiovascular conditions.² In people with lung conditions like asthma or bronchitis, the impacts of ozone can worsen the condition and cause trips to the emergency room.³ These heightened health risks exist in St. Louis, especially in the low-income, predominantly Black neighborhoods in St. Louis City and County. In St. Louis County and the City of St. Louis, the same zip code areas that have large low-income, majority-Black populations also have significantly higher rates of asthma-related emergency room visits than the Missouri and National averages.⁴ The City of St. Louis ranks first out of the 35 largest United States metropolitan areas in terms of asthma risk.⁵ This risk has increased over the last decade.⁶ Perhaps more startlingly, in a recent equity study compiled by the City of St. Louis, the City was awarded an equity score of 1 out of a possible 100 in the category of child asthma. The exceedingly low score was bestowed as a result of data showing that Black children living in the City of St. Louis are more than 10 times as likely as white children to visit emergency rooms for asthma-related complications.⁷ Additional ozone and NOx monitors are necessary to understand where this excess pollution is coming from, and in turn, to help MDNR to devise a plan for addressing it.

¹ Federal Register, *Finding of Failure To Attain for the Missouri Portion of the St. Louis Nonattainment Area for the 2015 Ozone National Ambient Air Quality Standards*, located at <https://www.federalregister.gov/documents/2025/06/20/2025-11304/finding-of-failure-to-attain-for-the-missouri-portion-of-the-st-louis-nonattainment-area-for-the#:~:text=On%20November%2025%2C%202024%2C%20the,date%20of%20December%2031%2C%202024>

² Environmental Protection Agency, *Health Effects of Ozone Pollution*, located at <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution>

³ *Id.*

⁴ Missouri Department of Health and Senior Services, *EPHT Asthma Data by zip code*, located at <https://healthapps.dhss.mo.gov/MoPhims/QueryBuilder?qbc=EA&q=1&m=1>; City of St. Louis Department of Health, *Understanding Our Needs, Update* (2016), page 15, located at <https://www.stlouismo.gov/government/departments/health/documents/upload/UON-20160102.pdf>.

⁵ East-West Gateway Council of Governments, *Where We Stand: Twenty Years Later*, located at: <https://www.ewgateway.org/wp-content/uploads/2017/08/WWS6EdNo3.pdf>.

⁶ *Id.*

⁷ City of St. Louis, *Equity Indicators Toward a St. Louis Region that works for us all, Baseline Report* (2018), at pp. 36-37, located at: <https://www.stlouismo.gov/government/departments/mayor/initiatives/resilience/equity/documents/upload/Equity-Indicators-Baseline-2018-Report-Documents.pdf>.

The Plan Fails to Comply With Title VI

The Plan fails to address the impacts of air pollution on low-income people of color, fails to address several important state-wide sources of air pollution, and overall fails to endorse a monitoring plan that includes sufficient ambient air monitoring. MDNR should address these failings in the Plan before issuing it in final form so as to protect the health of all Missourians, but in particular, the low-income people of color who have been systematically overburdened by air pollution in the state and as a result, are most vulnerable to its continued impacts.

Title VI of the Civil Rights Act of 1964 prohibits discrimination based on race, color, or national origin in any program or activity that receives federal financial assistance.⁸ As a recipient of EPA funding, MDNR is obligated to comply with these non-discrimination requirements for the duration of the funding. Additionally, EPA's regulations further clarify that recipients must not use criteria or administrative methods that result in discriminatory effects based on race, color, national origin, or sex, or that undermine the program's objectives for these protected groups.⁹ These regulations emphasize that discrimination, whether intentional or as an outcome of agency actions, violates Title VI.¹⁰

However, it appears that MDNR has not conducted the necessary procedural safeguards or analyses mandated by these regulations during the development of this plan. To rectify this, MDNR's plan should include safeguards such as engaging low-income communities of color through informational meetings about the Plan and the potential impacts it may have on those communities. Furthermore, the agency must analyze the Plan's potential disproportionate or cumulative effects on these communities, especially regarding air pollution within Missouri's air monitoring network.

MO's Air Monitoring Network is Lagging Behind IL's

Despite their geographic proximity and shared environmental challenges, including the St. Louis metropolitan area that spans both states, the MDNR 2025 Monitoring Network Plan significantly lags behind the Illinois EPA 2026 Ambient Air Monitoring Network Plan in terms of network size and scope.¹¹ Illinois' plan includes a robust network of monitors for criteria pollutants, reflecting a comprehensive approach to monitoring air quality across its urban and rural areas.¹² In contrast, Missouri's network is notably smaller, focusing primarily on meeting federal requirements under the Clean Air Act.

Illinois's larger network supports enhanced objectives like public reporting, research, and monitoring for vulnerable populations, such as those in East St. Louis. Missouri's more limited network, while compliant with NAAQS, lacks this breadth and does not explicitly

⁸ 42 U.S.C. § 2000d.

⁹ 40 C.F.R. §§ 7.35(b).

¹⁰ *Id.*; Although President Trump issued an executive order on April 23, 2025 that jeopardize these regulations, they remain in effect as of July 10, 2025, and should be considered in the Final Monitoring Network Plan.

¹¹ Illinois Environmental Protection Agency, *Ambient Air Monitoring Network Plan 2026*, located at <https://epa.illinois.gov/content/dam/soi/en/web/epa/topics/air-quality/outdoor-air/air-monitoring/documents/Illinois-EPA-Ambient-Network-Plan-2026-comment-period-Final.pdf>

¹² *Id.*

address vulnerable communities, leaving gaps in the protection of public health in shared regions like St. Louis.

Given the proximity of these states and their interconnected air quality issues, Missouri should expand its monitoring network to better align with Illinois' comprehensive approach, ensuring equitable and thorough air quality oversight throughout the region.

The Plan Ignores Air Pollution Risks from CAFOs

We express significant concern regarding the absence of air quality monitoring provisions targeting emissions from Concentrated Animal Feeding Operations (CAFOs). While the plan does address some measures for pollutants like PM_{2.5}, PM₁₀, lead, SO₂, NO₂, O₃, and CO in urban areas such as St. Louis, Kansas City, and Springfield, it does not address CAFO-related emissions in the rural regions of Missouri.

CAFOs emit multiple air pollutants, including but not limited to particulate matter, methane, hydrogen sulfide, volatile organic compounds, and volatile fatty acids.¹³ Notably, the particulate matter emitted from CAFOs consists of fecal matter, feed material, skin cells, and products of the microbial degradation of feces and urine, meaning that the major components of CAFO particulate matter are bioaerosols and endotoxins.¹⁴

Repeated exposure to particulate matter contributes to illnesses such as chronic bronchitis, asthma, chronic respiratory symptoms, and organic dust toxic syndrome, placing all Missourians living near these operations at risk – especially children and those with pre-existing respiratory conditions.¹⁵

While the Plan references Special Purpose Monitors (SPMs) for non-regulatory data, it does not propose their use for CAFO pollutants, despite the public health dangers that they pose. To address these gaps in air quality monitoring, MDNR should deploy additional PM_{2.5} and PM₁₀ monitors at CAFO sites and the surrounding regions, in conjunction with the implementation of SPMs to monitor ammonia, hydrogen sulfide, methane, and other CAFO emissions. Further, in future iterations of MDNR's air monitoring network plans MDNR should dedicate a section in the plan to detail CAFO monitoring efforts and report data. Throughout this process, MDNR should engage communities near CAFOs to identify priority issues and monitoring locations.

By expanding the network to include CAFO-specific monitoring, MDNR can better fulfill its Clean Air Act obligations and protect rural communities in Missouri.

¹³ Michigan Department of Environmental Quality Toxics Steering Group, *Concentrated Animal Feedlot Operations Chemicals Associated with Air Emissions* (May 10, 2006), https://www.michigan.gov/-/media/Project/Websites/mdhhs/Folder1/Folder50/CAFOs-Chemicals_Associated_with_Air_Emissions_5-10-06.pdf?rev=ac7b6d7bb56c4b85a378ce8fb9a30442

¹⁴ *Id.*

¹⁵ *Id.*; Kleinman M., "The Health Effects of Air Pollution on Children", *South Coast Air Quality Management District* (Fall 200), <http://www.aqmd.gov/docs/default-source/students/health-effects.pdf>

The Mingo Refuge Air Monitoring Site

The air monitor located within the Mingo National Wildlife Refuge is an integral part of the Interagency Monitoring of Protected Visual Environments (IMPROVE) program.¹⁶ As one of only two IMPROVE monitoring sites in the state of Missouri, the Mingo Refuge monitor is crucial to studying and managing the visibility and public health effects of haze within the state.¹⁷ We applaud the efforts to bring the site back online and encourage MDNR to work with Colorado State University and the United States Fish and Wildlife Service to enable monitoring to resume at Mingo Refuge as soon as possible.

The Plan Fails to Properly Address Inconsistent Data at the Buick Northeast Air Monitoring Site

The plan does not account for inconsistent or missing data, especially in areas that contain monitors in violation of NAAQS. In 2024, the Buick Northeast air monitoring site reported a violation of the lead NAAQS, while the Doe Run operated lead sampler showed lead NAAQS compliance. This is a major cause for concern as lead presents both a threat to public health and welfare. Lead exposure causes slowed cognitive development, brain and nervous system damage, developmental difficulties and hearing loss in children.¹⁸ In adults, lead can cause hypertension, high blood pressure, cognitive problems, nerve damage and reproductive issues.¹⁹ The inconsistent data between MDNR's Buick Northeast site and Doe Run's site highlights the need for an expansive air monitoring network that is investigated regularly to ensure proper function. The plan proposes MDNR combine data with the Doe Run site after EPA approval. While this may prove sufficient in handling the inconsistent 2024 data, MDNR must take action to ensure monitors are reliable. MDNR should introduce additional monitors near the Buick Resource Recycling Facility. This potential violation should be regarded as an urgent matter, and MDNR should work to remedy the potential faults of the Buick Northeast site and implement additional monitors to obtain consistent data.

The Plan Does Not Address Urgent PM₁₀ Exceedances in a Way that Protects Public Health

Federal regulations require that areas with a population greater than 1,000,000 that exceed 80% of the Particulate Matter (PM₁₀) NAAQS implement 4 to 8 PM₁₀ monitors.²⁰ The Front Street air monitoring site in Kansas City consistently exceeds 80% of the 24-hour 150 µg/m³ PM₁₀ standard. The plan proposes changing the T640X Troost monitor to a State and Local Air Monitoring Stations (SLAMS) in order to satisfy the 4-monitor minimum. The plan endorses 2 monitors in Missouri and 2 in Kansas in the Kansas City area. With the knowledge that the Front Street monitor repeatedly exceeds the PM₁₀ threshold, it is

¹⁶ MDNR, *Mingo Refuge Air Monitoring Site*, <https://dnr.mo.gov/air/how-air/air-monitoring-sites/mingo-refuge-stoddard-county> (last visited July 8, 2025); Interagency Monitoring of Protected Visual Environments, *IMPROVE Program*, <https://vista.cira.colostate.edu/Improve/improve-program/> (last visited July 8, 2025) [hereinafter IMPVE].

¹⁷ MDNR, *supra* note 10; IMPVE, *supra* note 10.

¹⁸ Environmental Protection Agency, *What Are Some of the Health Effects of Lead?*, located at <https://www.epa.gov/lead/what-are-some-health-effects-lead>

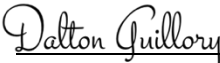
¹⁹ *Id.*

²⁰ 40 C.F.R. Part 58, Appendix D.

unsatisfactory that MDNR employ only 4 monitors. Exposure to Particulate Matter has serious public health effects including cardiac conditions, lung and respiratory conditions and premature death in people predisposed to lung or heart disease.²¹ MDNR should introduce additional particulate matter air monitoring sites in the Kansas City area to improve data collection and subsequently help MDNR with implementing measures to protect public health.

We look forward to MDNR's response to these comments. Thank you for your consideration.

Sincerely,


Dalton Guillory


Briannah Anderson

Great Rivers Environmental Law Center
4625 Lindell Blvd., Suites 200 and 300
St. Louis, MO 63108

²¹ Environmental Protection Agency, *Health and Environmental Effects of Particulate Matter (PM)*, located at <https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm>

Response to Great Rivers Environmental Law Center's Comments

The Plan Contains Insufficient Ozone Monitoring

The comment author recommends additional ozone and NO_x monitoring.

The 2022 –2024 ozone design value for the St. Louis area is 0.074 parts per million (ppm). In consideration of the design value and the estimated 2024 population of the St. Louis core-based statistical area (CBSA) of 2,811,927, the required number of ozone monitors in the St. Louis area is two (40 CFR Part 58 Appendix D). There are currently eleven ozone monitors in the St. Louis CBSA, seven in Missouri and four in Illinois. The ozone monitoring network in the St. Louis area is considerably denser than the minimum regulatory requirement.

Chemical reactions of a combination of primary pollutants emitted from stationary and mobile sources cause the formation of ozone. Therefore, ozone tends to be regional, not local in its distribution. The highest concentration of ozone in an urban area is generally downwind of the city center. The network in the St. Louis CBSA in Missouri includes two sites upwind of the city center, one in the city center, and four sites downwind of the city center, distributed so as to capture the highest concentration regardless of variations in wind direction. The West Alton site in St. Charles County, approximately 16 miles north of and generally downwind of the city center, has consistently been the design value site for the Missouri side of the St. Louis CBSA. The Blair Street site in St. Louis City is an indicator of the ozone exposure of persons living in the city.

Appendix D of 40 CFR Part 58 requires two near-road NO₂ monitors in the St. Louis area because the CBSA exceeds 2.5 million people, one NO₂ monitor in an area of maximum expected concentration at a neighborhood or larger spatial scale, one NO₂ monitor in an area of vulnerable/susceptible populations, and one NO₂ monitor at the Photochemical Assessment Monitoring Station (PAMS). The PAMS site may satisfy the maximum expected concentration site and/or the requirement for an NO₂ monitor in an area of vulnerable/susceptible population.

The Forest Park and Rider Trail sites measure the concentrations of NO₂ near the I-70 and I-64 highways in the St. Louis area and satisfy the near-road requirements. The Blair St. site satisfies the maximum expected concentration requirement, the vulnerable and susceptible population requirement, and the PAMS requirement.

The department installed two additional NO₂ monitors in 2025 at the existing Arnold West and West Alton monitoring sites. These sites also measure ozone. The additional NO₂ monitoring is intended to help the department better understand ozone formation in the St. Louis area. There is one NO₂ monitor on the Illinois side of the CBSA. These three monitors exceed the requirement for NO₂ monitoring in the St. Louis area.

The NO₂ and ozone monitoring networks in the St. Louis CBSA are sufficient, but the department will continue to evaluate the need for additional monitors in the area.

The Plan Fails to Comply With Title VI

Comment author suggests that the plan violates Title VI of the Civil Rights Act of 1964 because (1) the department does not have procedural safeguards in place under the Code of Federal Regulations (CFR) Title 40, §§7; and, (2) the plan fails to evaluate disproportionate impacts and disparate impacts on protected class communities.

The purpose of the Annual Monitoring Network Plan is to fulfill the obligation under 40 CFR Part 58.10(a), requiring the department to assess and demonstrate that its ambient air monitoring network meets the applicable monitoring requirements of 40 CFR Part 58, and to identify any proposed network changes. The primary purpose of the monitoring network is to determine whether areas in Missouri are meeting National Ambient Air Quality Standards (NAAQS). The Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (USEPA) to establish NAAQS for designated Criteria Pollutants and the states to adopt enforceable plans to achieve those standards.

The department followed its process for public notice and comments. The department posted the plan on the internet for over 30 days for public review and comment as required by the same regulation and in accordance with Title VI procedural safeguards. The department announced the availability of the plan for public review by email to 2,330 subscribers of Air Public Notices. Over 90% of the emails were delivered successfully. This final version of the plan includes the comments received and the department's responses to comments.

The department has Title VI procedural safeguards as required by 40 CFR Parts 5 and 7. (<https://dnr.mo.gov/ada-non-discrimination>), (<https://dnr.mo.gov/document-search/notice-under-americans-disabilities-act>), (<https://dnr.mo.gov/document-search/grievance-procedures-under-americans-disabilities-act>), (<https://dnr.mo.gov/document-search/modnr-policy-111-external-complaint-response-policy>), (<https://dnr.mo.gov/document-search/external-complaint-discrimination-form-mo-780-2926>).

The air monitoring network is for, and must serve, the entire state of Missouri. All monitors in the Missouri air monitoring network, including those operated by the state and industries under state review, meet the applicable requirements of 40 CFR Part 58, and siting requirements described at Appendix E. The monitoring plan does not violate Title VI. Comment authors assert Title VI was violated by failing to consider disparate impacts (a Title VI consideration), disproportionate impacts (federal policy guidance) and cumulative impacts (Federal policy guidance). First, the authors provide no specific justification for the alleged deficiency. The authors present no data for the department to respond or evaluate in terms of the pollutant/siting requirements of the law. Next, the authors identify a failure to conduct a disproportionate impact or cumulative impact analysis. However, the purpose of a monitoring plan is to measure effects of air emissions on communities throughout the state in locations determined according to the pollutant/scale specific requirements per 40 CFR Part 58. The pollutant specific siting requirements at Appendix E do not include guidance on how to identify impacts in terms other than specific pollutants to warrant moving monitors from one location to another. Lastly, as described in more detail above and in the 2024 Monitoring Network Plan (<https://dnr.mo.gov/document-search/2024-monitoring-network-plan>), the Blair Street site

measures the NO₂ exposure of a susceptible and vulnerable community, and the Forest Park and Rider Trail sites measure the concentrations of NO₂ near the I-70 and I-64 highways.

MO's Air Monitoring Network is Lagging Behind IL's

Comment author recommends the department use the size/design of the ambient air monitoring network operated by the State of Illinois as a model to improve the ambient air quality information available in Missouri.

As stated above, the purpose of the Annual Monitoring Network Plan is to fulfill the obligation under 40 CFR 58.10(a), requiring the department to assess and demonstrate that its ambient air monitoring network meets the applicable monitoring requirements of 40 CFR Part 58, and to identify any proposed network changes. The primary purpose of the monitoring network is to determine whether areas in Missouri are meeting NAAQS. The CAA requires the USEPA to establish NAAQS for designated Criteria Pollutants and the states to adopt enforceable plans to achieve those standards. The ambient air monitoring network in Missouri achieves this goal and exceeds regulatory minimum requirements in many areas.

Some current and future examples of the ambient air monitoring network in Missouri exceeding minimum network requirements include:

- 40 CFR Part 58 requires at a minimum six regulatory PM_{2.5} monitoring sites. There are fifteen PM_{2.5} monitoring sites operated in Missouri.
- 40 CFR Part 58 requires a minimum of ten regulatory ozone monitoring sites. There are twenty-two ozone monitoring sites in Missouri.
- The department has operated a National Air Toxics Trend Station at the Blair St. site in the City of St. Louis for over twenty years.
- The department plans to begin a sensor loan program in 2026 which would expand the amount of near-real time PM_{2.5} information available to the department and Missouri citizens.

Some current examples of research projects include:

- The department recently started a four-year NATTS like study at the existing Troost site in Kansas City to better understand air toxics in the area.
- Last year, the department started a research project to compare non-regulatory ambient air monitoring sensors to regulatory grade monitors with goals of:
 - Comparing regulatory vs. non-regulatory concentrations.
 - Evaluating quality assurance/maintenance requirements of the sensors.
 - Learning how to deploy these sensors in areas of concern in the future.
 - Being in a position to better inform citizens of Missouri about ambient air monitoring sensors.

Citizens may find information about the ambient air monitoring network on the department's webpage: <https://dnr.mo.gov/air/what-were-doing/monitoring>. Some specific examples include:

- Near real-time ambient air monitoring data for many of the monitors in Missouri is available on the department's website at:
<https://dnrservices.mo.gov/env/esp/aqm/docs/Allrep.PDF>.

- Citizens may also find near-time data and summary reports for specific pollutants at: <https://dnrservices.mo.gov/env/esp/aqm/docs/Allrep.PDF>.
- Historical Annual Monitoring Network Plans and 5-year Network Assessments explaining why the network is designed the way it is may be found at <https://dnr.mo.gov/air/what-were-doing/monitoring/network-annual-plans> and <https://dnr.mo.gov/air/what-were-doing/reports/monitoring-network-assessments>.
- Detailed information about each ambient air monitoring site may be found at: <https://dnr.mo.gov/air/how-s-air/air-monitoring-sites>.

The Plan Ignores Air Pollution Risks from CAFOs

Comment author expresses significant concern that the plan does not address monitoring of air pollution from Concentrated Animal Feeding Operations (CAFOs).

The purpose of the Annual Monitoring Network Plan is to fulfill the obligation under 40 CFR Part 58.10(a), requiring the department to assess and demonstrate that its ambient air monitoring network meets the applicable monitoring requirements of 40 CFR Part 58, and to identify any proposed network changes. The primary purpose of the monitoring network is to determine whether areas in Missouri are meeting the NAAQS. The CAA requires USEPA to establish NAAQS for designated Criteria Pollutants and the states to adopt enforceable plans to achieve those standards. Most Animal Feeding Operation (AFO) air emissions of concern are not classified as Criteria Pollutants and are, therefore, not regulated by any federal AFO-specific NAAQS under the CAA.

The Annual Monitoring Network Plan documents that Missouri's ambient air monitoring network complies with current federal regulations, details any changes proposed following its publication and submittal, and provides specific information on the existing and proposed monitoring sites.

The Mingo Refuge Air Monitoring Site

Comment author applauds the efforts to restore the ambient air monitoring at Mingo National Wildlife Refuges following recent tornado damage and encourages the department to work with Colorado State University and the United States Fish and Wildlife Service to accomplish this goal.

The department is an advocate for continued monitoring at the Mingo National Wildlife Refuge.

The Plan Fails to Properly Address Inconsistent Data at the Buick Northeast Air Monitoring Site

Comment author expresses concern about the inconsistent data between the lead ambient air monitoring performed by the department and the lead ambient air monitoring performed by Doe Run at the Buick Northeast monitoring site.

The level of the 2008 lead NAAQS is 0.15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) not to be exceeded in any 3-month period. The design value is the maximum rolling 3-month lead-TSP average over a 3-year period. The department performs lead sampling at the Buick Northeast site every six days. Doe Run performs lead sampling every day. The department's monitor showed violations of the NAAQS for the August – October 2024, September – November 2024, and the October to December 2024 three-month periods, with the highest average occurring during the August – October 2024 period. Doe Run had ninety-one valid samples during this period and the department had fourteen valid samples. The additional data points from the Doe Run monitor resulted in a lower three-month rolling averages that were compliant with the lead NAAQS.

The Plan Does Not Address Urgent PM_{10} Exceedances in a Way that Protects Public Health

Comment author states that the proposed four PM_{10} ambient air monitors in the Kansas City CBSA is unsatisfactory and suggests the department add PM_{10} monitors to the area.

From 2020 to 2024, the PM_{10} monitor at the Front St. site measured 24-hour average PM_{10} concentrations greater than or equal to $120 \mu\text{g}/\text{m}^3$ (80% of $150 \mu\text{g}/\text{m}^3$) on eight occasions and has exceeded the 24-hour PM_{10} NAAQS on two occasions. There were 1,809 valid days during that time frame resulting in 0.44% of days exceeding 80% of the standard and 0.11% of days exceeding the standard. While these exceedances have triggered the requirement for more monitoring in the area, the department disagrees with the comment that the monitor consistently exceeds 80% of the NAAQS. The department intends to continue to review whether the PM_{10} monitoring in the Kansas City CBSA is sufficient/excessive and work with the State of Kansas to update as needed.

American Lung Association Comments

July 11, 2025

Missouri Department of Natural Resources
Air Pollution Control Program
Air Quality Analysis Section/Air Monitoring Unit
PO Box 176
Jefferson City, MO 65102

RE: [The Missouri 2025 Monitoring Network Plan](#)

The [American Lung Association](#) is the oldest voluntary health organization in the United States, representing the more than 34 million individuals living with lung disease. The Lung Association is the leading organization working to save lives by improving lung health and preventing lung disease through research, education and advocacy.

The American Lung Association appreciates the opportunity to share our comments on the proposed monitoring network plan. We support some aspects of this plan and have identified other elements that we would like to see added to the plan.

In this plan, the Missouri Department of Natural Resources Air Pollution Control Program is proposing to continue to evaluate low-cost sensors for particulate matter and other pollutants, preparing a sensor loan program, and adding an aethalometer at the Troost monitoring station. Other aspects of the plan include removal of a monitor due to closure of the monitored facility, changing a monitor from a Special Purpose monitor to a State and Local Air Monitoring Stations monitor, and a request to combine lead monitoring data. The plan is notably missing the addition of new regulatory monitors that are needed to accurately measure pollution.

We agree with the expansion of the non-regulatory monitoring network of low-cost sensors, but the plan must address the urgent need for increased monitoring, especially for PM or ozone in Charles county.

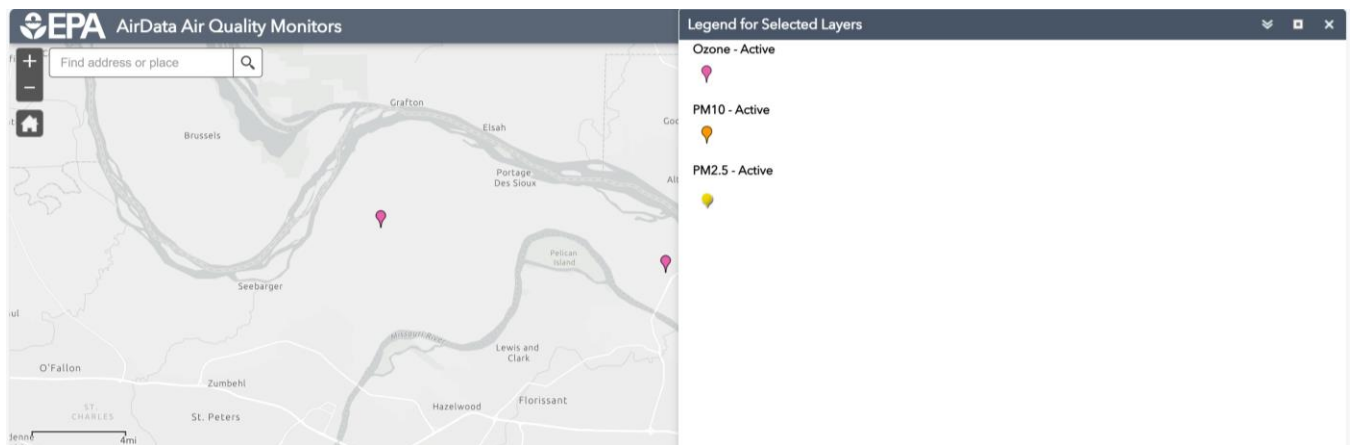
St. Charles County needs monitors for PM_{2.5} and ozone for many reasons:

- **Health effects:** [Health effects of ozone](#) include immediate breathing problems such as shortness of breath, coughing, higher risk of respiratory infections, and need for hospitalization in people with asthma or chronic obstructive pulmonary disease. Long-term ozone exposure can lead to increased respiratory illnesses, metabolic disorders, nervous system issues, reproductive issues, and increased respiratory—and cardiovascular—related mortality. [PM_{2.5} can lead to health effects](#) like increased mortality from all causes, cardiovascular disease, respiratory disease and lung cancer.¹
- **Satellite-derived estimate of PM_{2.5}:** St. Charles county was featured in one of the American Lung Association's "Something in the Air" reports, which found that "given its sizeable population, including several hundred thousand people in high-risk groups and its proximity to multiple pollution sources, St. Charles County's high satellite-derived estimate of PM_{2.5} should indicate a critical need for a closer examination of its air quality."²

¹ American Lung Association (2025). State of the Air 2025 – Health Impact of Air Pollution (pp. 25-29). [State of the Air | American Lung Association](#)

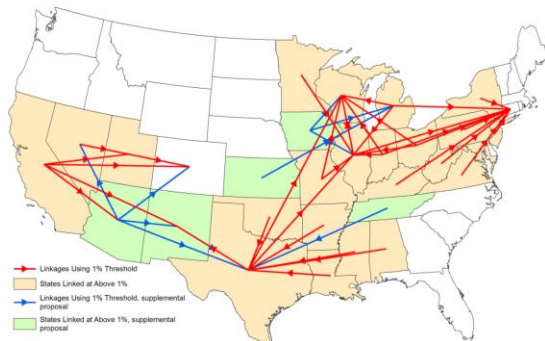
² American Lung Association (2025). Something in the Air-Bridging the Air Quality Data Gap with Satellite Technology. [Something in the Air Reports | American Lung Association](#)

- Currently there are no regulatory monitors for PM_{2.5} in St. Charles, per the map below.³



- The 2023 [good neighbor plan for 2015 ozone](#) (see map below) shows Missouri to be affected by transported pollution as well as by major stationary sources in-state that are contributing to its poor air quality.

Interstate Pollution Linkages Under the Good Neighbor Plan and the Proposed Supplemental Rulemaking¹



- There are many major stationary and mobile sources of emissions in Charles Co: large number of highways, airport, and train hubs (cargo); Sioux Energy Center (a coal-fired powerplant that got an exemption), other fossil fuel-fired EGUs, industrial clusters such as cement, metal manufacturing, and oil and gas, which are particularly polluting.

Six facilities in Missouri have received pollution exemptions through current administration: Labadie Energy Center (which has had a violation within 1 year),⁴ Sioux Energy Center, New Madrid Power Plant, Thomas Hill Energy Center, John Twitty Energy Center (has a Clean Air Act high priority violation for mercury pollution).⁵ This is unacceptable considering that coal emits mercury and dozens of

³ EPA (2025). [AirData Air Quality Monitors](#)

⁴ EPA (2025). ECHO Detailed Facility Report – Ameren Missouri Labadie Energy Center. [Detailed Facility Report | ECHO | US EPA](#)

⁵ EPA (2025). ECHO Detailed Facility Report – John Twitty Energy Center. [Detailed Facility Report | ECHO | US EPA](#)

hazardous air toxics, which have devastating health impacts. Combined with the [proposed repeal of MATS rule](#), this means communities are left without any safeguards to protect them from harmful emissions

Recent Canadian wildfires have led to high ozone days and spikes in particle pollution affecting AQ. Already in 2025, data from ozone and PM_{2.5} monitors in Missouri shows that the monitored major metro areas have each had worse air quality days than they did in all of 2024.

Air quality this year (2025):

St. Louis, MO-IL:

- PM_{2.5}: **2 red days**, 1 orange day
- Ozone: 1 orange day

St. Joseph, MO-KS:

- PM_{2.5}: **1 orange day**
- Ozone: no red or orange days

Kansas City, MO-KS:

- PM_{2.5}: **1 red day**
- Ozone: **1 red day**, 3 orange days

Springfield, MO:

- PM_{2.5}: **1 orange day**
- Ozone: no red or orange days

Air quality in 2024:

St. Louis, MO-IL:

- PM_{2.5}: 1 red day
- Ozone: 1 red day, 6 orange days

St. Joseph, MO-KS:

- PM_{2.5}: no red or orange days
- Ozone: no red or orange days

Kansas City, MO-KS:

- PM_{2.5}: 2 orange days
- Ozone: 7 orange days

Springfield, MO:

- PM_{2.5}: no red or orange days
- Ozone: no red or orange days

^{6,7}

With the worsening impact of climate change, wildfire smoke will continue to intensify, leading to a rising trend in more poor air quality days.

Missouri has an urgent need for additional regulatory and community level monitors for air pollutants so communities can protect themselves – especially considering the federal deregulatory agenda of the current administration that gives a pass to industrial polluters, the large number of emission sources, and climate change impacts (heat, wildfires, transported pollution) that are worsening.

Thank you,

Laura Turner

Senior Manager, Advocacy – Missouri, Arkansas

American Lung Association

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Lung HelpLine: 1-800-LUNGUSA

Lung.org | Laura.Turner@Lung.org

⁶ EPA (2025) – Air Data – Tile Plot-Single Year. [Air Data – Tile Plot | US EPA](#)

⁷ American Lung Association (2025). State of the Air Report. [State of the Air | American Lung Association](#).

- This year's report covers 2021-2023. "State of the Air" ranked St. Louis-St. Charles-Farmington, MO-IL as the 21st most polluted metro area for ozone pollution, which is worse compared to its ranking of 30th in last year's report. St. Charles County, Jefferson County, St. Louis County and St. Louis City received "F" grades for unhealthy levels of ozone pollution. Andrew County received a "D" for ozone, and Clay, Clinton, Lincoln, Perry and Ste. Genevieve Counties all received "F" grades. Only 9 counties in Missouri monitor particle pollution, and the majority of these received passing grades for this pollutant. Jackson County and St. Louis City received "D" grades for 24-hour particle pollution, and St. Louis City failed on the annual particle pollution measure.

Response to American Lung Association's Comments

St. Charles County Needs Monitors for PM_{2.5} and Ozone for Many Reasons

Comment author suggests a need for additional PM_{2.5} and ozone ambient air monitors in St. Charles County.

The 2022 –2024 ozone and PM_{2.5} design values for the St. Louis area are 0.074 parts per million (ppm) and 9.6 µg/m³, respectively. In consideration of the design values and the estimated 2024 population of the St. Louis core-based statistical area (CBSA) of 2,811,927, the required number of ozone monitors in the St. Louis area is two and the required number of PM_{2.5} monitors in the St. Louis area is three (40 CFR 58, Appendix D). There are currently eleven ozone monitors in the St. Louis CBSA, seven in Missouri and four in Illinois. There are currently eleven PM_{2.5} monitors in the St. Louis CBSA, six in Missouri and five in Illinois. The ozone and PM_{2.5} monitoring networks in the St. Louis area are considerably denser than the minimum regulatory requirement.

Chemical reactions of a combination of primary pollutants emitted from stationary and mobile sources cause the formation of ozone. Therefore, ozone tends to be regional, not local in its distribution. The highest concentration of ozone in an urban area is generally downwind of the city center. The network in the St. Louis CBSA in Missouri includes two sites upwind of the city center, one in the city center, and four sites downwind of the city center, distributed so as to capture the highest concentration regardless of variations in wind direction. The West Alton site in St. Charles County, approximately 16 miles north of and generally downwind of the city center, has consistently been the design value site for the Missouri side of the St. Louis CBSA. The Blair Street site in St. Louis City is an indicator of the ozone exposure of persons living in the city.

Fine particulate matter is chiefly composed of the effluent from combustion processes taking place in fossil fuel-fired power plants, transportation, industry, agriculture, construction, waste disposal and other sectors. In addition to the primary PM_{2.5} directly emitted from these processes, the majority of airborne PM_{2.5} is secondary, formed downstream from emission points by the condensation of sulfur and nitrogen oxides (SO_x and NO_x), volatile organic compounds (VOC) and ammonia (NH₃) emitted by these same processes. The same sources that emit PM_{2.5} and its precursors are largely responsible for emissions of the VOC and NO_x that cause the formation of ozone as well. Therefore, in addition to direct PM_{2.5} emission sources, sources of PM₁₀, SO_x, NO_x, VOC, and NH₃ also contribute to atmospheric PM_{2.5}.

PM_{2.5} speciation results in the St. Louis area indicate the species contributing most of the PM_{2.5} mass are ammonium sulfate, ammonium nitrate and carbonaceous material (organic compounds and elemental carbon). The highest contribution year-round is the carbonaceous material. The sulfate and nitrate contributions vary seasonally, with sulfate higher in the summer and nitrate

higher in the winter. Both carbonaceous material and nitrate are indicators of combustion sources.

Comparison of PM_{2.5} mass and speciation measurement results for the St. Louis area to results for rural areas shows an urban excess of 2.5 to 3 µg/m³, which (on an annual basis) is predominantly carbonaceous material (organic compounds and elemental carbon) with a smaller contribution of nitrate. Sulfate is only a minor contributor to the urban excess, suggesting that it results primarily from regional sources such as coal combustion sources in the general area along the Ohio River. The sulfate contribution to PM_{2.5} in St. Louis is less than it was several years ago, suggesting that emission controls and/or changes in fuel have reduced regional sulfur dioxide emissions.

Airborne PM_{2.5} in the St. Louis area is dominated by the impact of regional or urban-scale influences and by the contribution of secondary sources, and large SO_x and NO_x sources generally have tall stacks that reduce their near-source impact. However, it is still worthwhile to consider the location of emission sources, in order to help ascertain that source influences are not being either overlooked or overemphasized because of the location of monitoring stations.

The department considered the location of emission sources as a part of the network assessment and did not find information indicating the need to modify the network. The density of the PM_{2.5} network is sufficient to capture the PM_{2.5} pollution entering the St. Louis CBSA from all directions.

The purpose of the Annual Monitoring Network Plan is to fulfill the obligation under 40 CFR Part 58.10(a), requiring the department to assess and demonstrate that its ambient air monitoring network meets the applicable monitoring requirements of 40 CFR Part 58, and to identify any proposed network changes. The primary purpose of the monitoring network is to determine whether areas in Missouri are meeting the National Ambient Air Quality Standards (NAAQS).

The Annual Monitoring Network Plan documents that Missouri's ambient air monitoring network complies with current federal regulations, identifies any changes proposed following its publication and submittal to EPA, and provides specific information on the existing and proposed monitoring sites.

Steve Donatiello Comments

Sent: Friday, July 11, 2025 9:53 AM
To: cleanair <cleanair@dnr.mo.gov>
Subject: Comments on Saint Louis Area Monitors

I appreciate this opportunity to comment on the monitors in the Saint Louis area. Since the area has been redesignated as serious non-attainment, I wanted to get a better understanding of the monitoring network. Therefore, I attempted to visit each location. As I have mentioned, I have reservations about many of the locations, but as just two contributed to the redesignation, I will just address these two locations.

1. The monitor listed with the address of 13044 Marine Avenue appears to be located on adjacent property with the address of 12934 Marine Avenue. As this was one of the monitors with an exceedance for ozone, have you considered the potential impact of all the other electrical equipment at this location, such as cell towers, etc. could be increasing the ozone readings at this location? Electric switches do generate ozone. Perhaps relocating the monitoring unit 500 feet away from these other ozone sources for a while would answer this question.

2. I was unable to locate the monitor at 1709 Lonedell in Arnold West. You may wish to confirm the address. This was the other location with the high ozone reading. It appears to be in a heavily treed area from its location in AirNow.

3. Has EPA determined how to remove/account for the effects of trees on ozone readings, both of the monitors listed above exceeded the ozone standard and are in heavily treed areas. See this article. [Trees can make summer ozone levels much worse](#) Maybe relocate these monitors to some of the many cemeteries or parks in the area with open fields.

4. Though EPA guidance recommends monitors be located near highways, perhaps this requirement should be questioned. As this air quality data is presented on the news daily and in AirNow, it should be representative of the air we breathe, not just the air breathed by commuters.

5. The redesignation of Saint Louis to serious non-attainment due to these two monitors, as I understand it, creates additional costs for facilities with air permits or firms seeking new air permits. Has MDNR computed these costs and compared these costs to the cost of relocating these two monitors? The relocation of these two monitors might eliminate this redesignation and make the area more friendly to companies wanting to locate here. Thanks for this opportunity to comment on the monitoring network in the Saint Louis area.

Steve Donatiello

Response to Steve Donatiello's Comments

Potential Electrical Equipment Impact on Ozone Concentrations

Comment author inquires about whether the Missouri Department of Natural Resources has considered the potential impact of electrical equipment at a location nearby the Maryland Heights ambient air monitoring site (AQS-ID 29-189-0014) and suggests the department consider moving the monitor to determine the impact.

Ambient air monitoring siting criteria are defined in 40 CFR Part 58 Appendix E, *Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring*. 40 CFR Part 58 Appendix E 1.1(a) states: *This appendix contains specific location criteria applicable to ambient air quality monitoring probes, inlets, and optical paths of SLAMS, NCore, PAMS, and other monitor types whose data are intended to be used to determine compliance with the NAAQS. These specific location criteria are relevant after the general location has been selected based on the monitoring objectives and spatial scale of representation discussed in appendix D to this part. Monitor probe material and sample residence time requirements are also included in this appendix. Adherence to these siting criteria is necessary to ensure the uniform collection of compatible and comparable air quality data.*

The Maryland Heights monitoring site is meeting the requirements of 40 CFR Part 58 Appendix E. Additionally, continuity of monitoring at a particular location is important for understanding air pollution trends at a site and National Ambient Air Quality Standard (NAAQS) compliance. Moving the site may be disruptive to trend analysis and NAAQS compliance.

Unable to Locate Arnold West Ambient Air Monitoring Site

Comment author requested the department confirm the address of the Arnold West ambient air monitoring site (AQS-ID 29-099-0019).

The department confirmed 1709 Londell, Arnold MO is the correct address. The site is on land owned by Jefferson County Public Water District 1. The site is meeting siting criteria established in 40 CFR Part 58 Appendix E, which includes requirements to maintain a sufficient distance from trees.

Has EPA Determined How to Remove/Account for the Effects of Trees on Ozone Readings

Comment author inquires whether EPA has determined how to Remove/account for the effects of trees on ozone readings.

The purpose of the Annual Monitoring Network Plan is to fulfill the obligation under 40 CFR 58.10(a), requiring the department to assess and demonstrate that its ambient air monitoring network meets the applicable monitoring requirements of 40 CFR Part 58, and to identify any proposed network changes. The primary purpose of the monitoring network is to determine whether areas in Missouri are meeting the NAAQS. The Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (USEPA) to establish NAAQS for designated Criteria Pollutants and the states to adopt enforceable plans to achieve those standards.

The Annual Monitoring Network Plan documents that Missouri's ambient air monitoring network complies with current federal regulations, details any changes proposed following its publication and submittal, and provides specific information on the existing and proposed monitoring sites. The siting criteria in 40 CFR 58 Appendix E includes criteria for maintaining ozone monitoring inlet probes at a specific distance from trees.

Though EPA Guidance Recommends Monitors be Located Near Highways, Perhaps This Requirement Should be Questioned

Comment author suggests that the requirement to monitor at near-road locations should be perhaps questioned.

The purpose of the Annual Monitoring Network Plan is to fulfill the obligation under 40 CFR 58.10(a), requiring the department to assess and demonstrate that its ambient air monitoring network meets the applicable monitoring requirements of 40 CFR Part 58, and to identify any proposed network changes. The primary purpose of the monitoring network is to determine whether areas in Missouri are meeting the NAAQS. The CAA requires the USEPA to establish NAAQS for designated Criteria Pollutants and the states to adopt enforceable plans to achieve those standards.

The Annual Monitoring Network Plan documents that Missouri's ambient air monitoring network complies with current federal regulations, details any changes proposed following its publication and submittal, and provides specific information on the existing and proposed monitoring sites.

The near-road monitoring network was established as a part of the 2010 NO₂ NAAQS revision. 40 CFR Part 58 Appendix D, *Network Design for Ambient Air Quality Monitoring*, requires two near-road monitors in the St. Louis area and one in the Kansas City area. The Forest Park (AQS-ID 29-510-0094) and Rider Trail I-70 (AQS-ID 29-189-0016) near-road air monitoring sites are located in the St. Louis area and the Linden Hills near-road air monitoring site is located in the Kansas City area. The department's network meets this requirement.

Different sites have different scales of representativeness (microscale {up to 100 meters}, middle scale {100 meters to 0.5 kilometers}, neighborhood scale {0.5 kilometers to 4 kilometers}, urban scale {4 kilometers to 50 kilometers}, regional scale {tens of kilometers to hundreds of kilometers}, national and global scale {representative of the nation and globe as a whole}) depending on the pollutant and the purpose of that particular site. The scale of representativeness for each parameter is defined in Appendix 1 of the Annual Monitoring Network Plan.

Of the thirty-nine sites currently operated by the department, three of those sites are near road sites. The three near-road sites are microscale. The remaining air monitoring sites operated by the department are middle, neighborhood, urban, and/or regional.

Relocate Monitors to Eliminate the Redesignation of the St. Louis Ozone Non-Attainment Area

Comment author inquires whether the department has considered moving two monitors in the St. Louis ozone non-attainment area to eliminate the redesignation from moderate to serious.

The ability to modify the ambient air monitoring network is defined in 40 CFR Part 58.14, *System modification*. 40 CFR Part 58.14 prohibits the department from moving the two monitors in Missouri violating the ozone NAAQS unless certain conditions are met. Additionally, it is important to note that there are two additional monitors violating the ozone NAAQS on the Illinois side of the St. Louis ozone non-attainment area.

Amendments to the 2025 Monitoring Network Plan Following the Public Notice Period

The Missouri Department of Natural Resources did not make any changes to the 2025 Monitoring Network Plan as a result of the comments received during the public notice period. The department did make minor amendments to the 2025 Monitoring Network Plan following the public notice period.